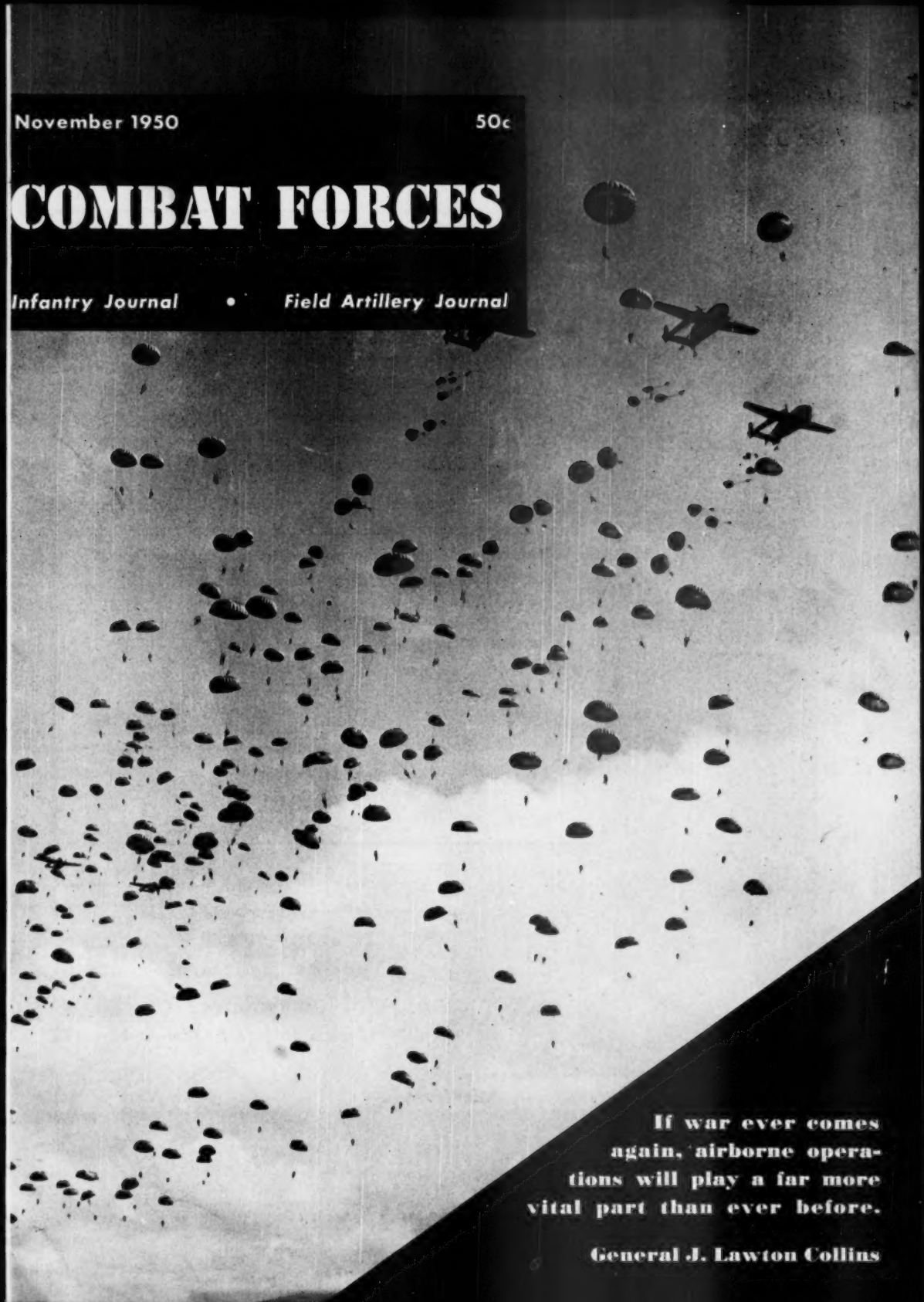
November 1950 50c

COMBAT FORCES

Infantry Journal • Field Artillery Journal



If war ever comes again, airborne operations will play a far more vital part than ever before.

General J. Lawton Collins

Churchill's Memoirs

VOLUME IV

The Hinge of Fate

By WINSTON S. CHURCHILL

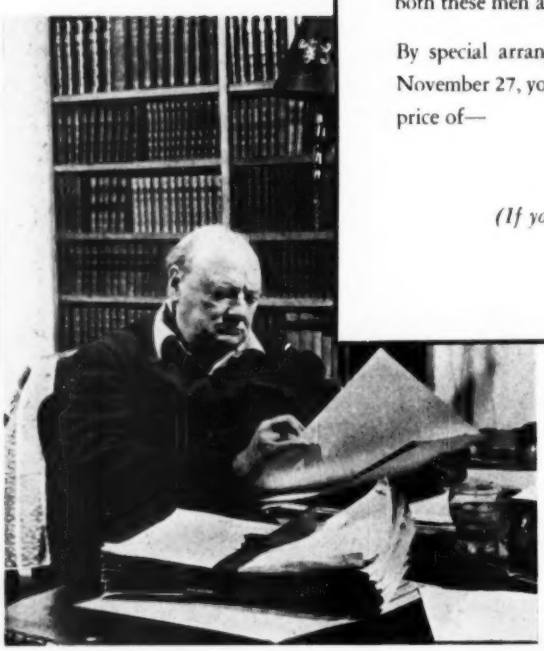
Volume IV of Churchill's memoirs gives us a more complete story of American participation in World War II (through the battle for Sicily) and gives us the decisive year of the war—the beginnings of our invasion of Europe and of reconquest in the Pacific.

More intimately than in the previous volumes, *The Hinge of Fate* introduces the reader to conversations behind the council table with Roosevelt and Stalin, and gives Churchill's candid appraisals of both these men and other fellow workers.

By special arrangement with the publisher, if you order before November 27, you can buy *The Hinge of Fate* at the prepublication price of—

$5.00

(If you order after midnight, November 27, the price will be $6.00)



Other Volumes of Churchill's Memoirs:

THE GATHERING STORM $6.00
THEIR FINEST HOUR $6.00
THE GRAND ALLIANCE $6.00

All four volumes for $20.00

If you order before midnight, Nov. 27

Order from

U. S. ARMY COMBAT FORCES Book Service

1115 Seventeenth Street, N.W. Washington 6, D. C.

ASSOCIATION OF THE U. S. ARMY

U. S. Infantry Association, 1893-1950
U. S. Field Artillery Association, 1910-1950

HONORARY PRESIDENT
COL. HARRY S. TRUMAN
President of the United States

PRESIDENT
GEN. WADE H. HAISLIP

VICE PRESIDENT
LT. GEN. RAYMOND S. MCLAIN

SECRETARY-GENERAL MANAGER
COL. JOSEPH I. GREENE, Inf-Rtd.

ASSISTANT SECRETARY
COL. ARTHUR SYMONS

TREASURER
A. S. BROWN

ASSISTANT TREASURER
MARGARET E. PALMER

EXECUTIVE COUNCIL

INFANTRY PANEL
MAJ. GEN. GEORGE H. DECKER
MAJ. GEN. KENNETH F. CRAMER
COL. SNOWDEN A. FAHNESTOCK
COL. LEGRANDE A. DILLER
COL. MARTIN HASS
COL. MALCOLM F. LINDSEY
COL. JULIAN B. LINDSEY
LT. COL. STEVE A. CHAPPUIS
LT. COL. DENVER W. WILSON
LT. COL. BRYCE DENNO
MAJ. MAX R. KENWORTHY
LIEUT. ROBERT J. LAMB

ARTILLERY PANEL
MAJ. GEN. S. LEROY IRWIN
BRIG. GEN. EDWARD J. MCGAW
BRIG. GEN. HENRY C. EVANS
COL. ALVA L. FENN
COL. JOHN LEMP
LT. COL. LAWRENCE M. SCARBOROUGH
LT. COL. CHESTER V. CLIFTON, JR.
LT. COL. ROBERT F. COCKLIN

U. S. ARMY COMBAT FORCES JOURNAL

The Combat Forces Journal is not the mouthpiece of the Department of Defense. The fact that an article appears in its columns does not indicate the approval of the views expressed in it by any group or any individual other than the author. It is our policy to print articles on subjects of interest to the Armed Forces in order to stimulate thought and promote discussion; this regardless of the fact that some or all of the opinions advanced may be at variance with those held by the officers of the U. S. Army Association, and the editors of Combat Forces Journal.

U. S. ARMY COMBAT FORCES JOURNAL

The *Combat Forces Journal* is published monthly by the Association of the United States Army. Publication date: 25th of preceding month. Publication, Editorial and Executive Offices: 1115 Seventeenth Street, N.W., Washington 6, D. C. Copyright, 1950, by Association of the United States Army. Entered as Second Class Matter at Washington, D. C., additional entry at Richmond, Va., under the Act of March 3, 1879.

SUBSCRIPTION RATES

One year $5.00; two years $9.00 when paid in advance; three years $12.00 when paid in advance. Group subscriptions to units and activities of the Armed Forces $4.50 each when paid in advance. Subscriptions for libraries, civilian groups or activities, and others not eligible for membership in the Association of the U. S. Army $5.00 per year. Foreign subscriptions $6.00 payable in advance. For other rates write Circulation Manager, Combat Forces Journal, 1115 17th St., N.W., Washington 6, D. C.

ADVERTISING RATES FURNISHED UPON REQUEST

UNITED STATES ARMY

COMBAT FORCES JOURNAL

Infantry Journal, 1904-1950 • *Field Artillery Journal, 1910-1950*

EDITOR: Col. Joseph I. Greene, Inf-Rtd.
ASSOCIATE EDITOR: John B. Spore
ASSISTANTS TO THE EDITOR: Col. Arthur Symons, CAC-USAR; N. J. Anthony, Esther E. Bennett, Lenna Pedigo
ASSISTANT EDITORS: Lt. Col. Robert F. Cocklin, FA-USNG; Maj. Orville C. Shirey, Inf-USAR; Lieut. Richard G. McCloskey, MI-USAR
CIRCULATION MANAGER: D. A. Mulloy
ADVERTISING DIRECTOR: Robert F. Cocklin

Vol. I No. 4 **November, 1950**

COVER: Parachute Drop. *(Photo by Dan Frankforter, Fairchild Aircraft and Engine Corp.)*

YOU AND YOUR ARMY. Comment on the Combat Forces 2

THE TACTICAL USE OF THE ATOMIC BOMB. *Major General James M. Gavin* 9

WHO SHOULD COMMAND AIRBORNE FORCES? *Lieutenant Colonel William A. Kuhn* 12

AIRBORNE CAPABILITIES. *Captain Harry H. Pritchett* 14

WHAT IS IT LIKE? *Colonel A. S. Newman* 18

AIRFIELD ELIMINATED. *Lieutenant Colonel C. B. DeGavre* 22

AIR RESUPPLY. *Lieutenant Kenneth D. Mertel* 24

USAF MILITARY TRANSPORTS 29

DRAGONFLIES OVER KOREA. *Lieutenant George L. Ragle* 32

WHO SHOULD COMMAND TACTICAL AIR FORCES? *Lieutenant Colonel William R. Kintner* 34

TIMING THE TACTICAL TEAMWORK. *Colonel Robert Whitney* ... 38

THE CASE FOR THE JET. *Captain John F. Loosbrock* 42

GREATER FIRE POWER FOR THE AIRBORNE ASSAULT. *Captain Gene H. Walters* 45

THE ARMY AIRBORNE CENTER. *Lieutenant Thomas B. Bruff* 48

NEWS OF THE SERVICES 49

INTERNATIONAL MILTARY SURVEY: World Perimeters. *Colonel C. H. Lanza* 54

BRIEFING THE SERVICE MAGAZINES 55

TO THE EDITORS 58

BOOK REVIEWS 61

BOOK LIST 69

UNITED STATES ARMY
COMBAT FORCES
JOURNAL

YOU AND YOUR ARMY

Korea—A Single Team of Battle

THE plan for retaking South Korea, and above that, the efficient skill of its execution, will be classic examples in the study of modern warfare from now on. Wholehearted credit has already been given in the press to Generals MacArthur, Walker, Almond, Coulter and their staffs, and to the many others of the unified UN forces who had big parts and small in this superb job of war. Once a full account of the campaign can be released, we shall give fuller credit in these pages to all the Combat Forces who turned the tables so magnificently.

Your JOURNAL hopes strongly, however, that histories of the Korean campaign will never neglect, in praising the delivery of the final crushing blows, those forces and their leaders who made success practically inevitable. We know enough now to realize what tremendous difficulties faced the first of our troops rushed from Japan to help the South Koreans. Perhaps the greatest glory should always be theirs.

Mostly new to the realities of war, they met huge odds the moment they reached the line of battle. Learning, many of them, the skill of combat right in combat itself, they slowed down more and more the rate of the Communist troops' advance. And they brought that advance to a halt, then held in place against every onslaught, still outnumbered many to one. War has seldom seen the equal in demands upon endurance. It has seldom seen the equal of the manner in which General Walker's forces met those demands.

As always, the infantryman had the toughest job, the least chance for rest, the most continuous combat hazard, and the highest losses in killed, wounded and missing. It detracts in no way from the splendid work of Artillery, Armor, and all other combat units to say so. Nor from the vitally necessary and effective work of the airmen.

Korea showed again, on every day of combat, that the ground combat forces are a single team of battle—with a single purpose. It showed that every fighting element—including the men and planes of tactical air and the men and ships and guns of the Navy—had only one use, one purpose in such a campaign as Korea. That purpose was to stop and eventually defeat the relatively powerful Communist armies.

The work of the Air Force was extremely vital to success. Beginning with a handful of planes and building steadily in power, its combat airmen hammered at the Red troops, tanks, and supply lines until, when the final offensive began, the Communist forces were hopelessly short of ammunition and food, and retreat itself was hopeless. Nor should we ever discount the contribution of Air Force bombing crews who operated at longer ranges, pounding at North Korean centers and reducing to a dribble, even before our landings, the flow of supplies to the South. Or slight the tremendous job of the Navy in a dozen different activities that made possible the final South Korean victory.

The Marines played a big part, especially in the final offensive, and they lived up in every way to their traditional high standards as fighting men. For esprit, for high morale, for belief in Corps and unit—and for completely welded cooperation of ground combat arms and air-ground teamwork, the U. S. Marines still warrant closest study on the part of the Army.

In the news reports it was natural that much was said of American forces and comparatively little of the South Korean. Yet a great deal has come through to indicate that the Korean, South or North, makes a tough fighting man when he has adequate tools of war in his hands and adequate leadership. And for the democratic world this is a fact of the most extreme importance. Our successful incorporation of Korean fighting men into our own American units in the later phases has vital manpower implications for all present and future United Nations forces.

Your JOURNAL hopes that no unpleasant arguments over combat credit will follow the Korean war. Your JOURNAL will give you the best reports it can find on the campaign as a whole, with credit to all, and it will not leave out the mistakes, from which we learn as much as we can from our successes. For the future of the UN and our own nation, the Korean campaign should give us innumerable lessons of war.

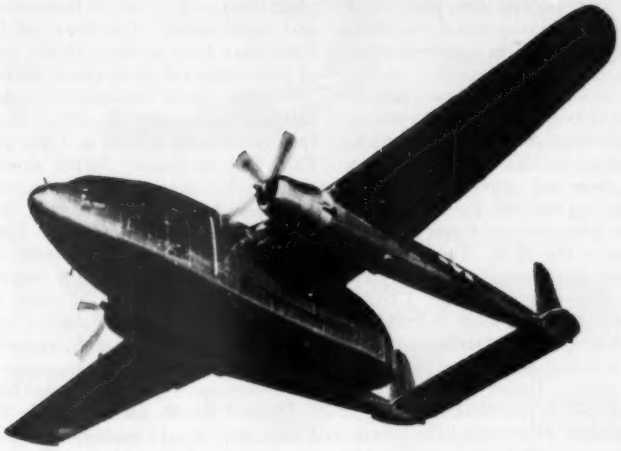
You'll Get "Operation Future" Next Month

DEMANDS on space in this issue were so heavy that we held back the concluding part of "Operation Future" by Lloyd Norman. It will appear in the December issue. Remaining portions of "Operation Amphibious" by Lieutenant Colonel Robert C. Williams, Jr. are scheduled for future issues.

The Container for the Thing Contained

THIS issue of COMBAT FORCES JOURNAL is dedicated to the proposition that the ground combat soldier has a close and abiding interest in two uses of the airplane for military purposes. One is its use as a cargo- and man-carrying vehicle just like the pack animals and wagon trains of day before yesterday and the motor vehicles of yesterday and today.

Assault TRANSPORT *ability*



• Add one more use for the already highly versatile Fairchild Packet—its adaptability as an assault transport.

• Fairchild has just converted one C-82 for Air Force evaluation . . . more can be modified quickly and economically. The larger and more powerful Fairchild C-119's perform equally well in this newest assault transport assignment.

• Moving swiftly in and out of small, rough, unprepared fields—directly behind combat troops if need be—the modified Packets can handle 16,000 lbs. of payload, loading and unloading with maximum efficiency and speed. The Packet's ability to haul men and material equals its pre-eminence in dropping paratroops and cargo.

• Only the Fairchild Packets, designed and manufactured to meet the many and complex problems of air support and supply, can so completely fill this military requirement for a versatile assault transport.

ENGINE AND AIRPLANE CORPORATION

FAIRCHILD

Aircraft Division

HAGERSTOWN, MARYLAND

The other is the use of the airplane as a weapons carrier, mounting machine guns, cannon, rockets and bombs. This is what we call tactical air power and by a figure of speech we have come to consider ground-support aircraft as a weapon in itself. There's no harm in this so long as we recognize the metonymy.

It has been said that the armed airplane is only a flying gun platform. That is well said. But it might be useful if we would apply our own ground-fighting phrase of "fire and movement" to tactical air power and see where it leads. It will have to be twisted a little to eliminate the conventional base-of-fire concept. But can't we say that without its weapons a fighter airplane is nothing but movement, free, undefiled—and useless? And that it is the fire power it carries that gives meaning to the *swoosh* of the jet through the skies? Its movement takes it to targets that would be out of reach of the weapons were they on the ground. But when the weapons speak and the enemy is torn and blasted, is it not tactical air power that is speaking? In that sense the tactical airplane is movement—movement that packs its own fire.

We Like The Artillery School News

IN our "News of the Services" section this month you'll find several columns of Artillery news, and your thainks for them should go—as our own thanks do—to The Artillery School at Fort Sill. The information contained in those items is an example of the kind of service we like to give our readers, especially those of the reserve components who don't have much opportunity to keep up with new developments and changes.

Your JOURNAL wishes it were wealthy enough to keep a staff member travelling to the different service schools digging up this kind of material. That is one project we shall start just as soon as the Association is financially able to do it. But until then we have to depend upon the staffs of the various schools. When they come through, as The Artillery School did this month, we are happy and you benefit. Incidentally, the type of material in the Artillery report is exactly the kind of material we want.

Planes that Fly Up and Down, Back and Forth

THERE are certain insects which can fly forward or backward at speeds ranging from very slow to moderately fast, and land and take off almost vertically. No airplane has ever been built with all these features, but it's a plane the combat soldier badly needs. His requirements—a plane that can carry heavy loads, fly several hundred miles at moderately high speeds and be capable of settling to earth and taking off from any handy cow pasture, city park, sandy beach or polar icecap—are almost identical with the flight characteristics of certain insects.

Planes with some of these characteristics have been designed. The helicopter flies vertically, but its horizontal flight characteristics aren't anything to cheer about and neither is its present load-carrying capacity. But work is being done on helicopters and bigger and better ones are in the offing. The convertible airplane—or convertaplane, as it's sometimes called—is going to get a tryout. This is a plane that lands and takes off like a helicopter and then flies away like a conventional prop-driven or jet-propelled plane. There's a description of the idea and its possibilities on page 22 of this issue.

But as we all know, several years elapse between design and production, so don't be asking for the issue of a convertaplane to your outfit for some years to come. The history of the Fairchild C-82—the first airplane specifically designed and built for the transport of paratroopers and their gear—shows how long it takes. The C-82 was conceived in 1941 and the first one flew in 1944. But the war was over before production began. Some two hundred or more of them were built before its bigger brother, the Fairchild C-119, appeared to replace it. The C-119 is now the standard airborne transport. And out of the C-82 and C-119 has come the experimental C-120—the "pack" or "pod" carrying plane with a detachable fuselage.

Useful as they are to the Army, the two Fairchild cargo ships now in use stand midway between the two needs of the Army: planes that can carry heavy loads and a plane that doesn't need a long and hand-surfaced landing strip. Neither the C-82 nor the C-119 will carry a tank, for example. But the Army needs air-transportable armor. The new Douglas C-124 will carry a light tank. But it (and the two Fairchild planes) require conventional runways; you don't set them down on any handy cow pasture or strip of beach very successfully—or more than once, anyway. And very obviously, unless the enemy is totally inept, you are not likely to have adequate runways during the early phases of an airborne operation. One answer may be the heavy-drop technique which has made great advances in the past couple of years. One of these days someone may parachute a light tank to earth—but first he's going to have to get it in an airplane that's built for the job of carrying it and letting it fall out while in flight.

Another solution is to develop an airplane that can fly on and off from a short and rough runway. The Army and Air Force have been working on this type of plane—they call them assault aircraft—for quite a time and newly designed and built assault aircraft recently went through evaluation tests at Eglin Air Force Base in Florida. Assault aircraft come in two sizes: light and medium. Light assault aircraft include the Chase YC-122C and Northrop C-125A. They are designed to carry eight thousand pound of cargo and one of the requirements they must meet is the ability to come in over a fifty-foot obstacle and stop within 750 feet after touching ground. On take-off they must clear a fifty-foot obstacle within a thousand feet.

Medium assault aircraft include the Chase XC-123 and a modified version of the Fairchild C-82. Mediums have a capacity of sixteen thousand pounds. They must clear a fifty-foot obstacle and land within 1,200 feet. On take-off mediums must be able to clear a fifty-foot obstacle within two thousand feet.

The evaluation tests at Eglin were rigorous. A field of sand and weeds, rutted and rough, was used for the tests. All of the competing planes suffered some damage but the consensus was that the Chase XC-123 was the best of the lot. Final announcement of the decision of the Air Force hadn't been made at the time this was written.

It is of interest to know that the two Chase assault planes are based on the design of the CG-18 glider made by the same company. Indeed, Chase has two gliders which are practically identical to their two assault planes. One distinct advantage assault planes have over gliders—besides the obvious one of having their own power plant—is the ability to come in for short landings without digging into the landing surface or skewing around as gliders sometimes do when the brakes are applied. Assault planes get around this by having reversible propellers which perceptibly pull down the speed of a landing plane. On this score, as well as others, assault planes have consistently out-performed gliders in evaluations and tests. But assault planes can also be towed as gliders, thus giving them practically double range. A loaded assault plane towed by a C-119 or similar

AVITRUC
—keeping ahead

World War II emphatically demonstrated the urgent need for versatile cargo aircraft. In today's military logistics, rugged assault transport planes, capable of landing troops and supplies in forward combat areas, or on short unprepared fields are basic requirements.

Avitruc is the result of combined research by Armed Forces and Chase engineers to produce an assault aircraft which meets these specifications.

EFFICIENCY

Standardized cockpit instrumentation provides simplicity of operation, facilitates training of new pilots and reduces familiarization time of experienced flight personnel.

SAFETY

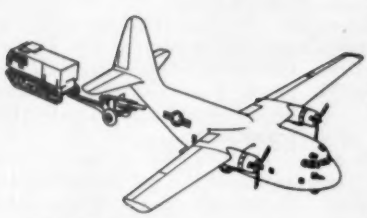
Steel tube nose, raised flight deck, and sturdy bulkhead between cockpit and cargo compartment provide maximum protection for flight personnel. Tie-down fittings each with 10,000 lb. capacity in any direction, on a 20" grid pattern in cargo compartment floor assure load safety, prevent cargo shifting.

ACCESSIBILITY

Power actuated, full width, low angle ramp gives access to unobstructed cargo space, permits fast, simplified movement of rolling stock, bulk cargo and troops.

PERFORMANCE

During assault transport evaluations at Eglin AFB in September, AVITRUC proved beyond question its ability to operate successfully in rough terrain — thus meeting the exacting requirements of the Army and Air Force.



FIRST with the BEST!

Chase AIRCRAFT CO., Inc.
WEST TRENTON, NEW JERSEY
STROUKOFF AVITRUC

plane to a distant airhead and then released to land and unload can, with its own power and fuel it has saved by being towed, fly back to its original base for another load and another tow to the airhead.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Reminiscences

This is the town we took:
Tore down the ancient wall
With artillery; tommy-gunned
Our way into the market place:
This is the first blasted ridge
They dug in, bombarded us
Till the rocketing airplanes
Plunged point-blank against their
Emplacements. On this horizon
Lies the dark sad blue mountain
Where our dogged dry patrols
Dug them out with grenades
And mortars. The Japanese corpses
Stiffened to the bullet-strike.

This is the town we took;
I am sauntering restfully
Sipping the smoke of my cigarette
In the cool of the twilight,
Returning the salutes of children,
The nods of my guerrilla buddies.

Hammers ring on the new houses
Among the ruined walls.
They are rebuilding the town.
Let me restfully stroll for one moment,
Conqueror and liberator.

HARGIS WESTERFIELD.

From *Words Into Steel*. By Hargis Westerfield. $2.75. Copyright 1949 by E. P. Dutton & Co. Reprinted by permission of the publisher.

Writing SOP—Almost Phenomenal Response

A FEW months ago we commented here on The Infantry School's campaign for easier-to-read-and-understand writing. Following that comment we published "Plain English" by Lieutenant Colonel Harry W. Stephenson, Jr., an article that described the Benning program and gave some good hints on writing. In that article The Infantry School's writing SOP was mentioned with an aside to the effect that a copy could be obtained by writing the editor of the *Infantry School Quarterly*. Now we are informed by the School that the response to that offer has been "almost phenomenal" and the School has had to reprint it. You can get your copy by writing the editor of the *Quarterly* at Fort Benning, Georgia.

Planes for Troops Through an Air Merchant Marine

AIRBORNE units are needed for every kind of fighting we might get into. World War II proved their value beyond a doubt. In Korea they could have been used to big advantage earlier and in larger numbers. They could be vital in any campaign more extensive than Korea. They would form an essential part of any United Nations force established on a permanent or semipermanent basis.

The postwar reduction left us with a handful of airborne troops. Their division organization exaggerated their power, for airborne is never stronger than its airlift and we would have done well to get combat teams anywhere in a hurry. No plans could be made for the urgent use of airborne divisions as divisions so long as no one knew where the troop and freight carrier planes were coming from.

Nonexistent airlift appears to be a problem only capable of solution by huge appropriations for special planes. But there is another way of tackling this big problem of defense, and this is by considering together the military and nonmilitary air transportation needs of our nation.

In fact, this has already been studied out in detail and put in bills for Congress to consider and Congress has had these bills for a couple of years.

This legislation calls for building up our "national airlift" with the best planes now on hand. They call for organized research and development of better transport planes for all purposes, and the speedy mobilization of our civil airlift when cold wars get warm or hot.

This would be done by setting up a government agency something like the Merchant Marine. (The bills in Congress are commonly spoken of as the Air-Merchant-Marine bills. It would contain both civilian and military men and their job would be the maximum development of our air logistic capability. We would, of course, have to maintain a high standard of readiness of ground support for the airlift thus obtained.

The money for the Air-Merchant-Marine would not be included in the Defense Budget. Militarily this seems to us something of a technicality, but a good selling point justified by the fact that civil air transport would benefit greatly. It also emphasizes the essential civilian control with adequate military representation.

The Air-Merchant-Marine would be an independent government corporation. Its five members would be on full-time duty. The corporation would lease existing types of planes to air lines, develop new types and lease those—all with potential military transportation needs in mind.

As the *New York Times* has pointed

First in
SAFETY
Getting urgently needed equipment and supplies to troops in difficult terrain has always been a decisive factor in warfare. Stanley Switlik and other pioneer parachute manufacturers reasoned that the materials could be dropped with properly designed parachutes. Then began the experiments with cloth and design from which grew today's cargo chutes. Thanks to this research and development, it is now possible to safely drop delicate equipment, medical supplies, food and other materials.
Another *first* through research for greater safety.
SWITLIK
PARACHUTE COMPANY, INC.
SWITLIK
SAFE-T-CHUTES
LALOR AND HANCOCK STREETS, TRENTON, NEW JERSEY, U. S. A.

out, "airplane manufacturers cannot finance the developments of such equipment unaided, because of the heavy development cost of today's big airplanes. . . . In the emergency of the war the aircraft industry showed its ability to design, to expand and to produce. It can be relied upon to meet current needs if the required funds are provided. . . ."

Infantry, artillery and all ground combat forces know the advantage of speed in maneuver. They know that big fast planes in plenty are needed, not only for airborne operations, but to carry and supply all kinds of fighting men over long distances when the emergency warrants it, or the best battle plans call for utmost speed.

The Air Force and the Army

BOTH Colonel Kuhn (page 12) and Colonel Kintner (page 34) think that the Army should have closer control over the aircraft that carry and support it. Colonel Kuhn is primarily concerned with command during the fly-in or assault phase of an airborne operation and the continuing job of flying in reinforcements and resupply. Colonel Kintner is concerned with the direction and control of tactical air power in battle areas.

Both marshal good arguments for their respective points of view and a lot more will be heard on these two points before the issues are finally resolved.

Actually, of course, the two statements and arguments in support of them can be reduced to one basic proposition. And to state that proposition plainly, recognizing that many, many subtle refinements and departures from it are possible, we might say that the question is whether the Army ought to have its own aviation—all the way from helicopters and light liaison planes to transports of all needed types and tonnages and on to include fighter and fighter-bomber aircraft for close tactical support.

The question may never come up for decision in that way. It is hardly possible that it will. More likely certain segments of the question will be debated and decided at various times. But basically it must be accepted that the arguments and the final decisions will be based on sincere, professional judgments. There is no use being cynical and saying that service chauvinism will decide the issues. Custom and service loyalties are indeed powerful factors, but men who make final decisions can and do overcome these compulsions. The COMBAT FORCES JOURNAL is not being naïve when it says that it believes that important interservice differences are resolved by men whose fundamental interest is to improve the military efficiency of the Nation.

The control of close-support aviation is the usual topic of debate when this subject comes up, but there are other large areas that can and should be considered as thoroughly as tactical air power. Colonel Kuhn discusses the command situation in an airborne operation without going into the relationship of troop-carrier units to the Army and their status within the Air Force. Why does the Air Force have two transport organizations: troop-carrier units and Military Air Transport Service? (True, MATS is a "unified" organization, but the great bulk of its manpower and aircraft "belong" to the Air Force.) By the very nature of its job, its planes and its name, MATS ranks higher in every man's mind than troop-carrier. If the heavy-bomber boys are the blue ribbon members of the military flying fraternity, the long-range MATS pilots are very close to them in prestige and glamor. Somewhere down below are the hard-working, seldom recognized airmen of the troop-carrier units.

Nothing will be gained by hammering at this point. But can it be wondered that some critics of the Air Force have charged that troop-carrier units are without high morale, lack training, and are sometimes less than the best? With two transport organizations, one global-minded, if not stratospherically inclined, and the other tied down to short-haul freighting and flying airborne gravel-crunchers and cannoneers on training missions, it is almost inevitable that the latter suffer in comparison. The old argument against élite units is applicable here. (An élite outfit is wonderful, but what the publicity and gilt-edged preferential treatment it gets does to the non-élite who get none of the preferences or plaudits but do the same hard fighting, shouldn't happen to the forces of a democratic nation.)

From the Army point of view, organic troop-carrier units would be very useful. Not only could their training be closely related to that of the airborne forces and other units, but the Army also could use them for its own transport needs, just as it uses its trucks.

Procurement of aircraft for Army use is still another area of debate. The planes the Army now owns—liaison craft and helicopters—are obtained for it by the Air Force, and this includes parts and all but basic echelons of maintenance and repair. And it includes design and testing of aircraft in which Army interest is acute and Air Force interest only perfunctory. It is human nature to take care of your own first and none of us need be surprised or critical if occasionally a repair job on an Army liaison plane is sidetracked in favor of aircraft belonging to the Air Force or that design, testing and procurement of planes in which the Army is interested sometimes seems mighty slow. Or that it is possible that Army recommendations concerning, let us say, the usability of a new transport plane have less weight than Air Force recommendations. But if the Army is to be completely independent of the Air Force in its aviation needs—which is not at all necessarily desirable—why then should not the Army have its own small counterpart of the Air Force's ramified organization for designing, building, testing and contracting for aircraft?

The COMBAT FORCES JOURNAL will leave it to others to answer and counter or support these propositions. But it does know that there are Army men, who have been closely involved in operations with the Air Force at all levels and in many different activities—from design and procurement to liaison and cooperation at command levels in combat and training missions—who can talk knowingly on this subject.

To Protect Your Modesty Use the Personal Pronoun

WE usually urge our writers who are writing about something in which they themselves participated to use the first person unblushingly. We hold, along with the best authorities on narrative writing, that the straightforward use of I is more modest than any heavy-handed attempt at circumlocution. Last month in "Operation Swamprat" the author introduced a phony—as he mentioned—a "Lieutenant Colonel Jones" who played an important part in the story. It was pretty obvious that Colonel Jones was the author. We let it stand because we were under the impression that the article was to be unsigned. However, just before we went to press we got our wires crossed and used the author's by-line —Lieutenant Colonel Waller Booth, Jr. Since then we have heard from Colonel Booth. He wasn't mad at us for our slip, just wanted us to know that his friends were wondering if he was so dumb as to think he could cover himself with a phony name. To reestablish Colonel Booth's modesty—if it has been even slightly affected—we take the blame on ourselves.

THE TACTICAL USE OF THE ATOMIC BOMB

Major General James M. Gavin

The atomic bomb will change the character of land warfare. There will be great and continuous dispersion, ability to fight in all directions, better communications, automatic weapons, and a high degree of land and air mobility

RETROSPECTION is a blessing for those who must plan and fight our wars. Never do we appreciate the full meaning of the events in which we participate. Only time can give us the answers to knotty problems of tactics, strategy, and weapons systems. We now have five years to look back upon our ideas and plans for the use of the newest weapon in our arsenal, the A-bomb.

Its first use was to destroy a Japanese city. Then followed the fanciful claims of what it would do. Typical of much public opinion were the ideas expressed by William Bradford Huie in the December 1948 issue of *Reader's Digest:* "We now have enough improved atomic weapons to immobilize the Russian nation . . . a staggering proportion of the inhabitants of Russia's key cities—millions of persons—can be killed or maimed

MAJOR GENERAL JAMES M. GAVIN is a former commander of the 82d Airborne Division. His present assignment is with the Weapons Systems Evaluation Group in the Office of the Secretary of Defense.

in the first raid." Little thought seems to have been given to other possible uses. The mere threat of its use on urban and industrial areas was credited with maintaining the uneasy postwar peace.

Now, this exclusive acceptance of the bomb as a weapon of final decision when employed against the economy and the noncombatant elements of a nation's population is hard to understand. For never has a weapon been developed that is better suited for use against enemy combat forces.

The model T bomb (Hiroshima) packs a wallop of twenty thousand tons of TNT. But since it does not make effective use of all of its potential energy and it largely overkills, its actual destructive effect is closer to 1,300 tons. The relative effects of conventional bombing and atomic bombing are described in the report of the United States Strategic Bombing Survey:

> On the basis of the known destructiveness of various bombs computed from the war in Europe and the Pacific and from tests, the Survey has estimated the striking force that would have been necessary to achieve the same destruction at Hiroshima and Nagasaki. To cause physical damage equivalent to that caused by the atomic bombs, approximately 1,300 tons of bombs (one-fourth high explosives and three-fourths incendiaries) at Hiroshima and 600 tons (three fourths high explosive and one-fourth incendiary) would have been required at Nagasaki—in the target area.
>
> To place that many bombs in the target area, assuming light attacks under essentially the same conditions of weather and enemy opposition that prevailed when the atomic bombs were dropped, it is estimated that 1,600 tons of bombs would have to be dropped at Hiroshima and 900 tons at Nagasaki. To these bomb loads would have to be added a number of tons of antipersonnel fragmentation bombs to inflict comparable casualties. These would add about 500 tons at Hiroshima and 300 tons at Nagasaki. The total bomb loads would thus be 2,100 tons at Hiroshima and 1,200 tons at Nagasaki. With each plane carrying 10 tons, the attacking force required would have been 210 B-29s at Hiroshima and 120 B-29s at Nagasaki.

In addition to the blast and heat effects, nuclear radiation accompanying the explosion of an atomic bomb also causes casualties, some fifteen per cent of the total.

THE vulnerability of combat forces to atomic attack will vary greatly. It will depend upon how much they happen to be shielded by hills, buildings, trenches, and so on—and upon how far they are from the point of burst. We can readily conceive of land forces in dugouts and heavy fortifications that would give them almost complete protection from an explosion at two thousand feet altitude. On the other hand, land forces not dug in, and massed at night to force a river crossing, for example, might be completely destroyed by a well placed atomic bomb. Massed aircraft on take-off airfields, and concentrations of shipping such as those off the Normandy beaches, would also be quite vulnerable. The vulnerability of each combatant in each set of conditions does not lend itself to exact definition. There is no doubt, however, that land combat forces moving in the offense or not well sheltered in defense would be prime targets.

Whether or not it would be worth to the enemy the expenditure of one or several bombs would depend upon the contribution of the destruction. One particular aspect should be noted: *lingering* radioactivity following an air burst at, say, two thousand feet, will not last more than a few minutes. In other words, highly mobile forces could at once attack into the area of the bomb detonation with reasonable immunity from radioactivity.

Most veterans seeking a comparison from their own combat experience would describe an atomic-bomb attack as like the simultaneous detonation of hundreds of high-explosive and incendiary bombs. It would be concentrated in an area of three to five square miles and would be accompanied by intensive radioactivity. Compared with artillery, it would approximate a high density of well mixed high explosive and incendiaries. Approximately eight thousand medium artillery shells per square mile, over a three- to five-square-mile area with a much heavier concentration in the center of the area than on the fringes, makes a reasonable comparison with the model T bomb. The intense fragmentation characteristic of artillery would of course be absent. This would be somewhat compensated for by radioactivity and objects sent flying by the blast.

FOR further purposes of comparison, we can consider situations in World War II in which actual comparable tonnages of HE were delivered—actual battles in which heavy bombers gave direct tactical support to ground forces. There were many situations in which an atomic bomb could have been decisive. In addition to contributing decisively to the achievements of the Army, its use could have saved many lives and much equipment.

Perhaps the best-known concentrated nonatomic attack of World War II is Cassino. The Air Force alone dropped 1,100 tons on Cassino in one attack. The defenders at Cassino were well dug in and protected. The attacking forces would have been much more vulnerable to atomic attack than the defenders.

In the Battle of Normandy, in July 1944, "carpet bombing" first found a place in the soldier's and airman's lexicon. The ground forces needed all air support they could possibly get when the critical breakout from the beachhead faced them. On July 24-25, 1944, the Air Force, using its heaviest bombers available in ETO, delivered 5,200 tons of bombs in ground support. They were dropped in an area of approximately 2,500 by 7,000 yards. This was equivalent to the destructive force of perhaps two atomic bombs. This was the Battle of St. Lô, a battle decisive in the larger Battle of Normandy. The performance of the Air Force's strategic bombers in this significant role contributed largely to gaining that decision. Ironically, the dispersed nature of the bombing caused the death of the Army's foremost enthusiast for air-ground training and cooperation, Lieutenant General Lesley J. McNair. A more striking example of the need for close teamwork between the ground and air forces would be hard to find.

Iwo Jima is another example of a battle in which an atomic bomb could have been used to great tactical gain. Iwo Jima was a well defended bastion directly astride the air route from Guam to Tokyo. In area, it compares closely to the destroyed area of Hiroshima. Its capture was costly—21,000 casualties, an escort carrier and an LCI sunk, major damage to 30 ships, and 168 aircraft lost.[1] How much less the battle cost and achievement would have been if an A-bomb could have been used, then followed immediately by air assault and air-landed forces.

CRETE and Okinawa had much in common tactically. The capture of Crete was an essential preliminary to an assault on Suez.[2] The capture of Okinawa was the necessary first phase of our assault on Japan. Both islands had several good air strips and were well defended.

Crete was given a conventional softening up of high-explosive bombing followed by an airborne assault. It was a costly venture. The attacking Germans lost 12,000 men and 170 air transports,

[1]USSBS (Pacific) Naval Analysis Division.
[2]Report of Interrogation of Generaloberst Student, October 1945.

and in the words of the German commander, General Student, "it was the graveyard of German parachutists."

Okinawa's capture was just as important tactically. After the usual non-atomic softening up it was assaulted by amphibious forces. When the last shot was fired and the costs were tabulated they amounted to 36 ships sunk, 368 ships damaged, 763 airplanes lost, and 48,025 casualties. A high price to pay for what one Marine called "a lousy piece of real estate."

In both battles a preliminary atomic bombing would have immeasurably aided the assault forces in establishing their initial lodgment. With an airborne assault following on the heels of an atomic bombing, and then an air-landed and amphibious build-up, their capture could have been achieved with comparatively small loss of life and combat equipment.

World War II contains many other examples of engagements in which an A-bomb could have been used tactically with decisive results. Among those best known to our Army are Anzio, Bastogne, Salerno, and Normandy.

ANY consideration of the bomb's employment will take into account its cost. Actually its cost may be expressed in two ways—in actual intrinsic worth and its strategical and tactical worth. From the dollar viewpoint, Dr. J. R. Oppenheimer has estimated that its cost would run to about one million dollars. Tactically, however, the bomb may be given an entirely different value. For example, with a limited stockpile, it would be highly uneconomical to expend a hundred bombs for the purpose of destroying a ground division that costs a hundred million dollars, if there were other divisions available as replacements. But if a single bomb could render one division ineffective, it would probably be a worthwhile one-bomb investment. Between these two extremes are many situations in which a bomb might be used to advantage. The chief military consideration must be this: What will its use mean in terms of battle decision at the time and place of its employment? The tactical or strategic gain achieved would usually be more important than the intrinsic worth of the bomb in any determination of whether it should be used. The airman must also weigh the cost of giving the needed ground support in terms of what it will cost to deliver it. The operational cost and losses in an attack by 150 to 200 medium bombers may be so high, compared to that of a few bombers escorting and carrying an A-bomb, that the A-bomb would most often be the better choice.

FOR months one of the toughest battles in American history has been fought in Korea. Greatly outnumbered, and attacked by a foe that throws in masses of men and equipment regardless of losses, the UN forces in Korea tasted the bitterest experiences of war. The issue has been in doubt. But one aspect of the battle does seem clear. The United Nations land forces, using every weapon that can be got to them with our limited mobility, took heavy casualties. They shared a common battle achievement with their fellow combatants in the Air Force and the Navy—the holding of some three thousand square miles of real estate in South Korea. The weapons systems of the land forces, judging by the casualty reports, have been the hardest hit. Their fighting has been heaviest and their available weapons most taxed. A greater participation by the air-weapons system would add greatly to the successful outcome of the fighting. The most powerful tactical air weapon is the atomic bomb. Its delivery by our air forces would contribute greatly to the common battle achievement.

Setting aside the very serious moral and political considerations and considering only the tactical effects, large concentrations of division or larger size should not be allowed to go unscathed by atomic attack. Certainly several bombs on massed enemy forces, wherever they can be attacked without endangering our own, would contribute greatly to their final, if not immediate neutralization. It is hard to think of anything that would add more to the effectiveness of the UN forces. Here was an enemy forced to mass his means for a crossing both because of our defense and his own lack of mobility. He follows the traditional Soviet tactics of massing the men and means to do a job regardless of losses.

The bomb is the tactical answer to this problem whenever it is possible to deliver it profitably.

THE military man recognizes the deep-seated political and moral convictions and ideals of our nation and its leaders, when the possible use of atomic weapons arises. He has no wish to override these vitally important considerations. But no one, military or civilian, who is conversant with modern weapons, including the atomic, can avoid comparing the tactical capabilities and limitations of those weapons. Nor can he help but see that in many tactical situations, the use of atomic bombs may greatly reduce the ultimate total of United Nations casualties.

Most certainly the possibilities of retaliation by the enemy will also be weighed by all who must give serious thought to the tactical uses of atomic weapons. These possibilities, however, can only be determined by the highest national authorities on the basis of estimated comparative availability of atomic weapons. Certainly, if the struggle for freedom continues, they will one day be faced by such a decision. And the military man would be completely lacking in judgment and common sense if he did not consider the tactical possibilities of atomic weapons in every combat situation that arises.

IN summary, the A-bomb is an excellent tactical weapon. It is much higher on the curve of deadliness than either the conventional bomb or the artillery shell. The greater the explosive effect of the atomic bomb the more effective it will be as a tactical weapon. If there is validity to this view of the bomb as a tactical weapon there is a clear implication of a need for considerable development to make its combat employment readily possible. A higher accuracy of delivery is needed than at Hiroshima or Nagasaki. Any means that will aid our ground forces to meet on terms of combat parity an enemy much stronger in numbers deserves our closest attention. And finally, if an H-bomb is developed and A-bombs become available for tactical employment, we should realize *now* that this will radically revolutionize land warfare.

Land warfare will change in character, both offensively and defensively, to accommodate itself to this new force. Great and continuous dispersion out of immediate close contact with an enemy, an ability to fight effectively in all directions, better communications, lighter and more numerous automatic weapons, electronics systems to "close" the gaps between physically isolated units, and a high degree of air and land mobility should all characterize the defense of tomorrow. These, plus an ability to concentrate in a global sense at the time and place of decision, should characterize the attack.

With foresight we should be able to develop these capabilities in our armed forces. So it is well to note in conclusion that in this air-atomic age retrospection is good but foresight is better.

Who Should Command?

Lieutenant Colonel William A. Kuhn

Why should an airborne commander give up control of his troops during the fly-in?

A LARGE airborne airhead-type operation can be logically separated into three phases: planning, movement, ground operation. The planning phase continues through the initial movement of airborne troops to marshalling areas, and the briefings, practice loadings, and so on. The fly-in or air-movement phase includes the air movement of airborne assault troops as well as the continuing build-up of air-landed troops and supplies. The ground phase includes the seizure of initial objectives by the assault troops, establishment of the airhead, and, in large-scale operations, the expansion of the airhead.

In airborne operations which depend upon continuous support of transport aircraft for flying in troops and supplies, the air-movement phase and ground phase overlap. Consequently, the success of the ground phase is largely dependent upon the movement of supplies and troops as needed into the airhead.

Analogies have been drawn between amphibious and airborne operations. However, there are differences between amphibious and airborne operations, and two of the most distinct of these become apparent during the movement of forces to the objective.

Accepted doctrine for amphibious operations places command authority with the naval commander during the over-water approach. In airborne operations, there is no accepted doctrine describing command authority during the fly-in phase of airborne troops. This important matter has been arbitrarily settled by saying that normally an Air Force officer will command this phase. The movement phase of an amphibious operation is peculiarly suitable to the accepted transition of command. A supporting fact is in the length of time that Army troops usually are under the jurisdiction of Navy command during movement and approach. This period is much greater than the corresponding period in an airborne operation. This difference brings forth another thought by drawing a similarity between the naval gunfire support of the amphibious operation and the fighter air support of the airborne operation. However, such a comparison can be cast aside. The fighter air support provided by an airborne commander is no different from the fighter air support provided by any other ground commander. There is a divergence in the physical support rendered by the Navy to an amphibious force as compared to the physical support by the Air Force to an airborne force. When the amphibious troop commander leaves the side of a ship, the naval commander remains in the vicinity until the shore operation is firmly established. When the airborne commander leaves the door of an airplane he is on his own. There is no recourse but to fight the battle and accomplish his mission.

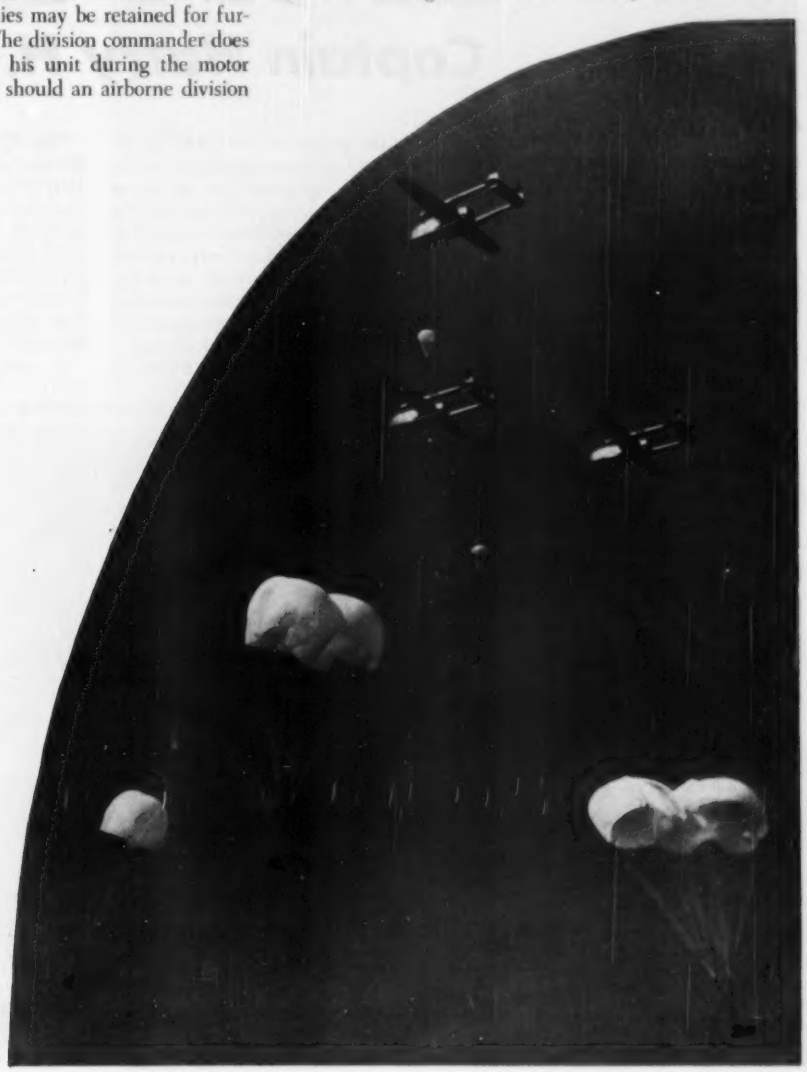
IT is a cardinal principle to place the mass of airborne troops in the objective area during the first day of an airborne operation. This requires large numbers of cargo aircraft. The flexible organization and mobility of troop-carrier forces permit movement from one part of the

LIEUTENANT COLONEL WILLIAM A. KUHN, Infantry, is on duty at the Army Airborne Center at Fort Bragg. During World War II he served as a battalion commander and regimental executive officer with the 507th Parachute Infantry and 325th Glider Infantry in Europe.

world to another. This makes large-scale airborne operations feasible for any theater commander regardless of shore line or terrain barriers. After the first few days of an airborne operation, the need for large numbers of transport aircraft diminishes, and relatively few aircraft are required for continuing air support.

It is fallacious to compare the movement phase of an airborne operations with the over-water approach of an amphibious operation. The details of procedure for air movement of airborne troops more closely resemble the ground movement of troops by transportation truck companies. Consider a hypothetical case of an infantry division that is furnished a large number of trucks for the purpose of moving the entire unit from one place to another. Before movement begins plans are made for loading, truck allocation, routes, and security. After the division has been transported to the new location, the transportation truck companies may be retained for further support, if necessary. The division commander does not relinquish command of his unit during the motor movement. Therefore, why should an airborne division commander relinquish command of his division during air movement of his division?

The most suitable type of command relationship for an airborne operation appears to be one that effects a joint grouping of Army and Air Force units in the operation. It is further visualized that this joint force would be commanded throughout its existence by one individual. Accordingly, since the majority of airborne operations are primarily land operations conducted by land forces, the single commander should logically be selected from the Army component. It is recognized that there are certain specific airborne missions in which the Air Force might have primary cognizance in the operation such as the seizure and holding of airfields in furtherance of air operations. But in any event, if the airborne joint force commander is selected from the Air Force he must be present and direct the ground action in the objective area.



AIRBORNE CAPABILI

Captain Harry H. Pritchett

Our present ability to launch a successful airborne operation of respectable size is limited only by our lack of enough planes of the right type

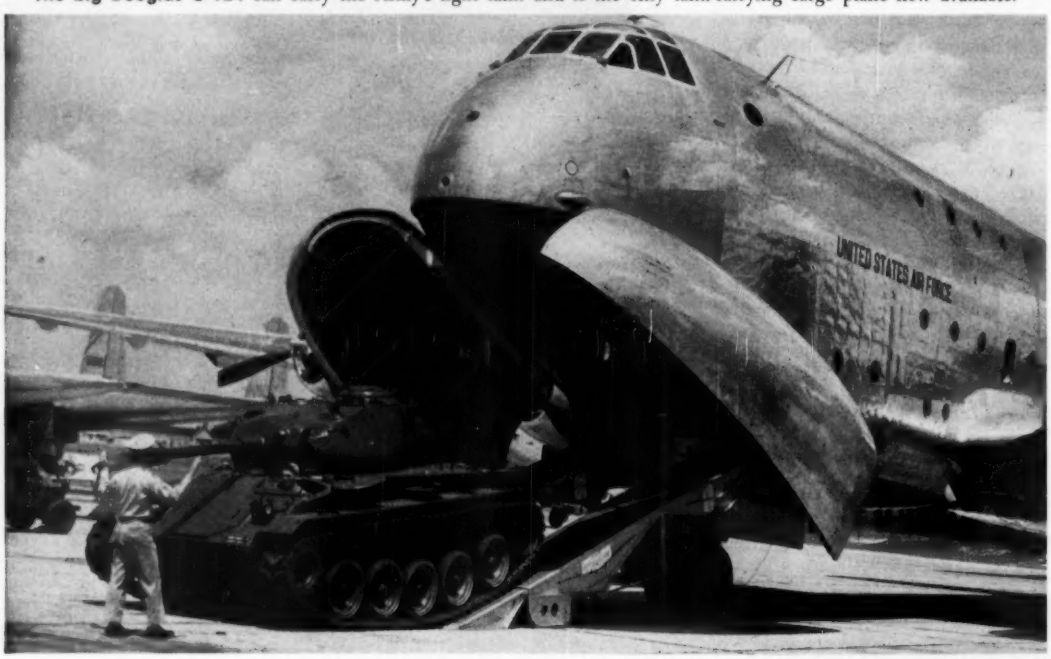
CAPTAIN HARRY H. PRITCHETT, Infantry, is a former member of the 82d Airborne Division. He is now a student at The Armored School.

IT is the purpose of this article to discuss today's airborne capabilities, utilizing present equipment or equipment definitely on the way. It is not intended to describe the many details involved in planning and executing a corps or army airborne operation. Only the major factors will be covered. The serious student of airborne operations is referred to *Airborne Operations Manual*, published at the Command and General Staff College.

The German invasion of Crete was the only true airhead operation in World War II—by this I mean it was the only operation initiated and sustained entirely by air. All Allied airborne operations were planned and executed in the expectation of early reinforcements on the ground and were therefore projected only short distances ahead of our own line and achieved only limited results.

In contrast to the limited efforts we

The big Douglas C-124 can carry the Army's light tank and is the only tank-carrying cargo plane now available.



TIES

made in World War II, the airhead concept visualizes that the bulk of the troop strength would consist of air-landed troops with only the initial assault of two or three divisions being made by parachute troops. Resupply would be by aircraft with initial and emergency resupply by parachute. The full pay load of aircraft such as the C-82 and C-119 can now be utilized on resupply drops by employing the heavy-drop technique.

Gliders are unsatisfactory for a number of reasons. The critical phase of the airhead is during the build-up period when airfields have been seized and landing strips are being prepared. Aircraft capable of carrying a very considerable tonnage are needed. The assault transport or powered glider is the answer. Gliders reduce the payload of the towing aircraft and serve no useful purpose except during the initial assault.

Transport aircraft are classed as light assault, medium assault or heavy. These aircraft are shown below:

CLASSIFICATION OF CARGO SHIPS

Type	*Cargo Load*
LIGHT ASSAULT	
C-122	8,000
C-125	8,000
MEDIUM ASSAULT	
C-123	16,000
C- 82	16,000
MEDIUM CARGO	
C- 82	16,000
C-119	30,000
HEAVY CARGO	
C-124	50,000

Assault transports that can carry a 90mm gun and truck are an important development. Parachute troops need no longer suffer from extreme want of vehicles, artillery and AT guns, as these can all be dropped by parachute with the assault echelon.

ALTHOUGH parachute troops execute strategically offensive missions, the crucial phase of the operation is very likely to see them in a tactically defensive role. The seizing of initial objectives ordinarily will not be too difficult as parachute troops will be employed in overwhelming numbers in the vicinity of the objective areas. In addition, the quality of the attack troops should be considerably better than that of the defenders. Once the enemy has located the airhead area he will unquestionably move powerful armored forces against it. The most potent weapon against him at this stage is the fighter-bomber with its bombs, rockets and napalm; however, strong attacks cannot be stopped by air attack alone, and the possibility of bad weather eliminating tactical air support must always be considered. The airborne soldier therefore is likely to find himself dependent upon his own weapons for his defense. If the enemy is able to occupy or take under observed fire our arrival airfields, our troops in the area will likely be destroyed since they cannot be reinforced.

The defensive capabilities of the paratrooper against armor have been increased since World War II by the addition of the 90mm gun and the 3.5-inch rocket launcher to his arsenal. He also has the AT mine. But even if all six of a regiment's 90mm guns are to arrive with the assault echelon by either parachute or assault transport, the antitank fire power of the airborne regiment is still quite inadequate. Authorities have revealed that revolutionary new AT weapons are being developed which will greatly reduce the effectiveness of armor; however, at present the only solution to the antitank problem is the formation of airborne antitank battalions. These units would be equipped with 90mm AT guns with 2½-ton trucks as prime movers—both of which can be air-landed by assault transports.

I am familiar with the arguments about the unsuitability of towed AT guns. However, they are the best weapons of the kind we have at this time. The M24 tank which can be flown in the C-124 does not have sufficient punch to be an effective antitank weapon. Until something better comes along the 90mm guns must be the airborne soldiers' principal AT weapon.

The range at which airheads may be established from departure airfields is affected by many considerations, some of which can be briefly considered. No attempt to establish range limits can be made as each specific situation must be judged in the light of a combination of factors. Here are some of them.

The tonnage in terms of men or equipment that can be flown into an airhead during a given period of days is limited by the number of sorties which the Air Force is able to fly. The more planes, the more sorties; the less range, the more sorties, within certain limits, of course. Thus the number of aircraft available affects the range of an airborne operation.

Departure airfields with adequate facilities must exist for receiving, loading, and dispatching aircraft. The number and capacity of such fields also affect any airborne operation.

In most cases the number and capacity of arrival airfields will be more critical than that of departure airfields. Departure airfields can be dispersed in a general area of several thousand square miles and scarcely affect the transport capabilities of the air force. But the small area of the initial airhead, perhaps some 150 square miles at most, will normally contain only one or two airfields. Of course, large tonnages can be parachuted into unprepared drop zones. This method of delivery has the obvious advantage of not being restricted by traffic control requirements such as exist at arrival airfields. For a continuous air-landing effort one plane landed and one plane dispatched every three minutes per airfield is considered to be good. Some forty aircraft could parachute their loads in that same three minutes. Of course, these parachute drops would not be continuous, but in the first crucial day the tonnage delivered could well exceed that which is air-landed.

PARACHUTE delivery of large tonnages by the heavy-drop method must be considered as standard practice. Early construction of airstrips by air-landed engineers and equipment is a definite requirement. Recent developments in the field of chemical soil solidification may provide the answer to the problem of surfacing runways.

The establishment of great airheads opening another front deep in the enemy's homeland is by far the most promising of all future airborne missions. Exercise Swarmer was the prototype of this type of operation; however, it was limited by a peacetime budget and peacetime availability of aircraft, and involved only thirty thousand troops of all services. The future wartime airhead will undoubtedly consist of a field army of some two hundred thousand men or more. This is not a fantastic possibility. Such an airhead could be established at a range of several hundred miles with aircraft in production today provided we commanded the skies. The Douglas C-124, of which the Air Force has sixty-five on order, can carry a light tank or an 8-inch howitzer plus its prime mover, or the 155mm gun and prime mover, or heavy engineer equipment, or three fully loaded 2½-ton trucks. The C-124 indicates that our future airhead should not suffer from want of heavy equipment or fire power. It must be remembered that the larger the aircraft, the greater the tonnage delivered per operating crew and plane. This is an important factor when one plane is landing every three minutes whether it carries five thousand pounds or fifty thousand pounds. Of course runway requirements place a limit on the practical size of aircraft, and it appears that the C-124 is about as large as we can go today.

The first 2½-ton truck to be airlifted to Korea by a C-119 drew a crowd.

It must be remembered that as an airhead grows, fewer transports can be used to bring in additional men and supplies, as more and more aircraft will be required to supply troops that are already at the airhead.

THE following aircraft are required to lift the assault echelon consisting primarily of the regimental combat teams of one division:

Type	*Payload*	*Number Required*
C-119	20,000	381
G-18 or C-122	8,000	550
G-20 or C-123	16,000	188

Gliders are not used in follow-up echelons. Therefore it is questionable whether many gliders will be produced as the assault transports or powered gliders can be used again and again and if necessary land in unimproved fields until such time as a runway is prepared. Also, heavy drops have eliminated much of the need for gliders. The following aircraft are required to air-land the division's follow-up echelon:

Type	*Payload*	*Number Required*
C-119	20,000	370
C-124	50,000	16

The assault echelon is brought in by parachute and glider and landed in a half-hour or less on several drop zones. The follow-up echelon would begin arriving as soon as arrival airfields were seized.

The following compilation shows the total sorties required to lift both echelons of one airborne division.

C-119	751	(381 carry parachute-landed men and supplies)
C-122	550	
C-123	188	
C-124	16	
Total	1,505 sorties	

As can be seen, only 25 per cent of the lift of an airborne division is dropped by parachute. This 25 per cent includes the majority of the men of the combat units with the remaining 75 per cent of the lift utilized for equipment. Experiments are now under way to drop sixty men instead of forty from the C-119, thus using more of its payload potential. This would decrease the number of aircraft required for the parachute echelon by nearly one-third. Although large parachutes can land such vital items as guns and vehicles and will undoubtedly replace the glider, the great bulk of equipment will be air-landed. This emphasizes the need for adequate arrival airfields.

The 155mm howitzer, weight 12,700 pounds, is rolled into a C-119.

TO sum up our present airborne capabilities:

The self-sustaining airhead containing a field army is not a visionary concept but can be done with the equipment on hand or scheduled for acceptance within the next year. At present aircraft are not available in sufficient numbers but undoubtedly would be in wartime.

Air movement of troop units with all organizational equipment must be regarded as normal.

Large aircraft such as the C-124 are the most economical means of transport in terms of time and personnel.

The initial assault within the foreseeable future will still be executed by parachute troops; however, the main combat elements of the field army will be air-landed.

Airborne forces can by-pass terrain barriers, including enemy fortifications, and can destroy installations invulnerable to bombing attacks.

WHAT IS IT LIKE? Something like this . . .

WHAT is it like to jump out of an airplane in flight? And just why should you and I, as professional soldiers, indulge in any such desperate business?

As to the "why," if the part played in World War II by the airborne divisions, plus the Berlin Airlift, plus Exercise Swarmer, plus a glance at history and the development of new techniques like the use of trucks, tanks, and airplanes—all considered in relation to how and where we might fight World War III—if a consideration of these things does not clearly show you already why a large percentage of any future army must be airborne, then nothing I can say would clarify the "why" for you.

So I'll just pass over the "why" and get down to the "what"—to what it is like for you, yourself, personally, to become a paratrooper.

But perhaps I should qualify myself as a witness first as (those of you who don't know me, of course) might think I am just one of those crazy persons who has no more sense.

To begin with, I am no youngster, having made my first jump at the age of forty-seven, just one year ago. Further, I had been a commissioned officer in the groundborne infantry for twenty-four years before I joined the airborne. You will probably agree that at my time of life I must have had some powerful convictions about the future of the airborne to induce me to jump the Infantry in order to be an airborne jumper.

Two things more: Let me assure you that I am extremely afraid of high places, and I am no Bernarr Macfadden. What I am trying to say is that I am about average physically and mentally for my age, grade, and experience, and that my testimony can, I hope, be accepted as that of an average field grade officer.

Having established myself as a strictly nonexpert witness whose testimony is thus, in many ways, more likely to be considered unbiased by the uninitiated, I now take the stand:

AS a place to start, it should be said that this business of jumping out of an airplane and descending to earth dangling from a parachute still has about it an aura of desperate danger that is entirely unfounded. This is a fact I want to underscore. You are in far more danger of your life when you take your automobile out on the highways. To illustrate, in several hundred thousand jumps since the end of World War II, not a single member of the 11th Airborne Division (in which I serve) has been killed in a military parachute jump—but many have been killed in automobile accidents.

No doubt there was a time when to fire a rifle was a venturesome and awesome thing, and certainly that was true of the first persons who drove tanks and flew airplanes. But as improvements were made in design and we learned more about them, the mystery and fear of an unknown but highly distorted danger evaporated.

The parachute is reaching that category . . . with one important exception: unless you have faith in both yourself and in the parachute you may get yourself to the door of the airplane—and that will be as near to making a parachute jump as you will ever come.

COLONEL A. S. NEWMAN, Infantry, is Commanding Officer, 511th Airborne Infantry, 11th Airborne Division. He has been a rated parachute jumper for something like a year now. During World War II he commanded an Infantry regiment in the Pacific.

You draw your chute from the maintenance crew . . .

your stick lines up and gets aboard its plane . . .

you stand in the door, hands outside, knees bent . . .

Colonel A. S. Newman

then you get checked to see that everything's ok . . .

inside you wait for the jumpmaster's instructions. . . .

you have no sensation of falling . . .

In this business you need faith, faith in yourself. Nearly all of the difficulty is in your own mind—but that can, somehow, seem a little farfetched when you reach the door of the plane. . . . It is not as hard to describe as you might think. Just imagine you are going up in an airplane to make a jump, and I think you can follow along with me and see how it is.

FIRST we get strapped into our chutes, a main chute that fits on our backs and a reserve chute that is fastened on in front just about midway between your belt line and your chin. A skilled member of a parachute maintenance unit will carefully check to see you are properly strapped into the contraption.

Among the things he will inspect:

The metal box on your chest, to which are fastened four pieces of heavy webbing—two over your shoulders, and two down from between your legs. (Don't worry. The harness is so well designed and adjusted that the danger you are thinking about is just as imaginary as your unfounded fear that the chute may not open.)

He looks to see that the two safety devices on the metal box are properly adjusted. Both of these are so designed that in just three motions you can free yourself from the chute.

He also looks to see if your harness is tight enough, yet not too tight. The ripcord mechanism on your reserve chute is checked, and he also examines the snap fastener on your anchor line—of which more later.

After the rigger has checked you, there will be another check by your plane commander—and probably by at least one other man. The

you relax, don't look at the ground, land easy . . . you hope!

airborne believes not only in checking the mechanical arrangements, but in double and triple checking—which is one of the primary reasons it is so safe to jump.

Now follow me into the plane. We will sit in the row of seats on this side, facing the other "stick" who have taken seats on the opposite side of the plane. Each of us is holding a metal snap fastener in one hand.

The reason we are so careful of this snap fastener is that it is attached to a very heavy piece of webbing that goes back over one shoulder and disappears inside of the parachute which is strapped to your back. That piece of webbing is attached by several thicknesses of white cord to the top (apex) of your parachute itself. The reason for this is that in making military jumps you do not pull a ripcord while you are in the air—in fact you do not pull a ripcord at all.

You will see how it works if, as we make our jump, you follow my every motion.

"Get ready!" the jumpmaster commands.

You hold out your hand with the metal snap fastener up in front of your eyes where you can see that it is open, and ready to be snapped. You also check the little piece of wire that dangles on a string, which you will insert in a hole in the metal as a cotter key to lock the snap fastener.

"Stand up!"

Now we get up to our feet, and face through ninety degrees until we are looking toward the rear of the plane where there are two doors—one on each side, a door for each line of men. We quickly look upward to a metal cable that runs the length of the plane, not unlike the cord the conductor pulls on a railroad train, except that this one is about half an inch thick and made of steel. We grasp this cord with one hand, and hold the snap fastener ready to hook on to it with the other hand.

"Hook up!"

We snap the fastener to the cable, and insert the wire so that the fastener is locked to the cable.

"Check equipment!"

Each of us checks his own equipment.

"Sound off equipment check!"

We then sound off our numbers from rear to front, indicating our equipment has been checked and we are ready.

"Stand in the door!"

Here the man nearest the door steps into the door, with his hands on each side of the door, ready to jump on command. By the way, I did not tell you, but you were nearest the door . . . so there you are in the door now.

Your knees are bent slightly, but the plane sways in flight so it is hard to tell if they are shaking.

YOU are now looking out to the horizon, with the earth far below. You glance down at it, at the squares of plowed ground, and the dappled effect of the tops of trees . . . in fact that group of green treetops down there looks a lot like a tremendous cauliflower, doesn't it? But one glance is enough . . . it seems a good idea to look out at the horizon again.

The plane is now droning on, with the engines going at a slower pitch, because they have slowed down for the jump. This will reduce the shock for you when the chute opens. Of course, the main jerk will be caused by the sudden stop from your forward motion in the air, and not from the velocity of the fall earthward.

Now close your eyes a moment, and think of yourself standing in the door. Don't hurry. Just close your eyes and remember you are standing there, and what the ground looks like, and the way the top of the group of trees looks like a big cauliflower, the way the plowed ground is like a checkerboard . . . you know that in a matter of seconds it is time to jump, that you are going to be expected to use your own muscles to get out of that airplane.

Nobody is going to throw you out. There is no need to hold so tightly to the edges of the door. In fact that is wrong. Get your hands and thumb on the *outside* of the door . . . that's right, now you can use your arms to help pull your body forward.

That is good, hold it.

You want to know how it feels to jump? Well, if you have really let your imagination go like I told you to, that is the way it is—the way you imagine it would be, only more so. How in hell do you think anybody can tell you what it feels like in words?

OK, now that you know how it feels to stand in the door ready to jump, I guess you will have to let me continue to testify how it is when you *do* jump.

It's like this.

You take a quick breath—it's really not a sob, it just may feel a little that way. (Not only the first time either, but every time you jump.) Then as you step strongly forward, your arms and legs act more from reflex and from a predetermined will that they *must* cause your body to go forward. You know you are going to jump, there are those men in the stick behind you and you are their stick leader . . . the first man in the door.

You have lived through this moment many times . . . and your faith in yourself made you know that when the time came you would jump. You couldn't refuse if you tried to.

So you jump.

It's that simple.

Of course you have a slightly suffocating feeling the instant your senses tell you that you have lost your balance and are falling into space. Your heart pauses in its beat, and every body function stands still, but the force of gravity takes command, and your flesh and blood and body weight start on a plunge earthward.

You have no sensation of falling. Things happen too fast for that. There is a rush of air on your face, a rushing noise in your ears . . . and your hands are clasped over your reserve, ready to pull the ripcord if your main chute does not open.

You count aloud and loudly: "one thousand, two thousand, three thousand."

You are counting because if by the time you have said "three thousand" you have not gotten the opening shock of your main chute, you must pull the ripcord on your reserve. It does not take long to fall one thousand feet, and when you have made that count you are well on your way.

But you just don't have a chance to say "three thousand."

As your body started its fall under the influence of gravity, that snap fastener stayed anchored to the steel cable in the plane and the weight of your body pulled out the fifteen feet of that strong webbing.

Your body by this time is well below the plane, and the webbing pulls the parachute out of the back-pack—in fact the chute is literally torn off of your back and pulled straight out behind you.

When the webbing has been pulled out its full length, and the parachute itself has pulled out—then the weight of your falling body brings into play the old principle that a chain is no stronger than its weakest link. Remember, that webbing was tied to the parachute with several strands of white cord with known tensile strength. That strength is enough to make sure the parachute is pulled out its full length—and then, when the weight of your body falls on the white cord, it breaks. At this instant you are the heavy handle on the bottom end of an unopened nylon umbrella—but the rush of air literally blows it open with explosive force.

Several things I have mentioned happen simultaneously. Actually, the opening shock comes from the sudden open-

ing of the chute from three causes: gravity, the prop blast, and the sudden stop in the air from a forward speed of around 125 to 150 miles per hour.

As your chute opens most of the shock is felt in the front part of your shoulders—that is if you have a proper body position and were falling feet first.

You spin and whip in the air, and no two openings will ever be quite the same.

Of course, without being told, you get curious and look up to see what the condition of your nylon is—which is what you are supposed to do. "Check your canopy" is the way the school puts it.

If anything is wrong, such as a very large hole, or a development known as a "Mae West"—why that is why you have that reserve along. Incidentally a Mae West is caused when one or more of your suspension lines somehow passes over your canopy, and you have two canopies which resemble a large brassiere. There are other rare partial malfunctions which can occur . . . but regardless of what may happen, there is always that reserve chute.

So there you are, suspended between earth and sky—and one of the first things you notice is the silence.

BUT there isn't much time to listen to the silence and shake hands with yourself over having dood it . . . because you are dropping toward the ground at what seems to be an ever-increasing speed, and there are things to do.

First, you take a good look around to be sure there is no other paratrooper near you—and if there is you take distance from him by sideslipping.

You notice that you seem to be headed for the DZ (drop zone) and feel reassured, because you know the DZ has been plowed to reduce the chance of injury. The danger in parachute jumping is not the chance that your chute will fail to function—but that you get hurt in landing. There is a right way to do it, which greatly reduces your chance of hurt . . . and so you begin to "prepare for landing."

After being sure you are over the DZ, you look at the horizon—because to look at the ground is not good. It starts to rush up at you as you descend, and you may try to dodge it—which is bad, as this may cause you to involuntarily pull up your legs to cushion the shock. What happens then is that you may land sitting down—a procedure not recommended.

So you look resolutely anywhere but where you are going to land, reach upward and partially suspend yourself on your arms by pulling down on the risers, keep your feet together, your knees slightly bent, and your toes below your heels—because the result of landing on your heels can be disconcerting.

As you get very near the ground the fact you are oscillating becomes more evident—then, suddenly, your feet touch down. Your hand-hold on the risers keeps your body from flipping downward in a pop-the-whip motion, because your arms are still gaining support from the canopy. The result is that you sway into the ground relaxed in a sort of rocking-chair motion, without landing too solidly on any one part of your body.

Not as difficult to do as it sounds, if you just don't look at the ground, and relax.

Sort of an anticlimax to be on the ground, isn't it?

SO much for jumping, and what it feels like—but there is another side of being airborne, and I would like to tell you what that feels like, too.

When I saw the notice they were making allowances for elderly gentlemen in the airborne school at Fort Benning, and thus I might get into the airborne, my friends first explained to me I was crazy . . . and then many of them added, "And you will not like paratroopers."

Well, I didn't know . . . there had been a lot of guff in the newspapers from time to time about a paratrooper who did this or that. Of course I soon was able to discover that if you are in the Artillery, or the Engineers, or the Quartermaster, or the Infantry, or the Signal Corps—any job except the airborne—that the newspapers never seemed to consider it worth mentioning. So everybody was either in the Army—or he was a paratrooper.

The net result was that the paratroopers got an undeserved reputation for making newspaper headlines.

Sure, paratroops get into just about every kind of scrape there is—but so do men from every branch of the service, and so do civilians.

The public has decided that when a soldier jumps from an airplane he is performing a "desperate" act. Of course this is just as false a view as the view that jumping is a desperate thing. It is a simple military technique which any normal man can easily learn and perform with little chance of injury.

Most paratroopers are young, and I can tell you, confidentially, that the boys who become airborne are more agile physically and mentally than the average. If you do not believe me, just take a good look at the young troopers.

Another thing that seems to have been kept from the general public is that if you meet a paratrooper without his identifying insignia he will seem perfectly normal, except that he is very much alive—there is usually a light in his eyes that is sometimes missing in others. They are the finest soldiers I have ever seen. And this witness is not a young enthusiast, but one who has been around quite a while and acquired a background by which to evaluate men.

Which leads up to another thing: There seems to be a closer bond between the airborne soldier and his officers than there is in a nonairborne outfit—because each of them knows that the other has passed a test. The law of gravity does not salute, and every time a jump is made they share an experience that brings them closer together—because officers and men continually prove to each other they have the will to look eternity in the face, whether they think of it that way or not.

Please don't get the idea we think we are supermen. Each of us knows that the average man can be a paratrooper if he will just make an average effort. It is the nonparatroopers who set us apart. For example, we know that when an airborne exhibition team of paratroopers visited two of our training divisions—*one out of every two men in the training divisions volunteered for airborne!*

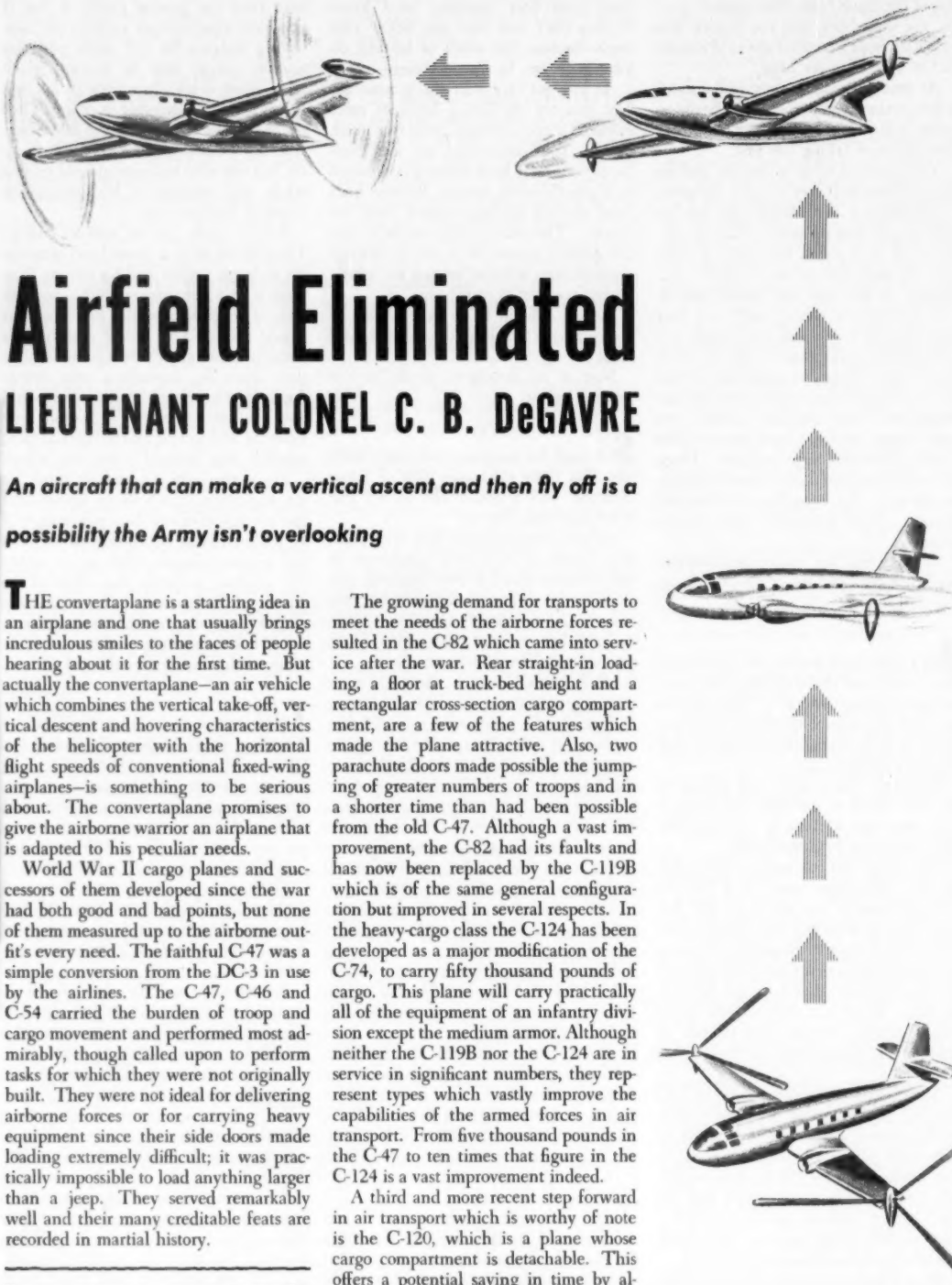
THIS means that the attitude of the American public is changing toward the business of being a paratrooper . . . in fact my presence is one proof of that. Parachute jumping, like airplanes and tanks and radar and other innovations, has now proved itself—and there are experience figures we can use to evaluate it.

These figures have forever destroyed the idea that a man takes a death-defying, desperate chance when he makes a parachute jump. The facts just do not support the idea.

Incidentally, getting shot at in a ground battle is a much deeper test of a man than making a parachute jump—and I think I am in a position to judge, having experienced both. This leads to my final point of what the airborne is like.

For a long time there has been considerable conversation about finding a way to see who would fight when the shooting war came. Well, here is a test and a simple one: There are hundreds of thousands of people who have never been airborne, and who never will be, but who are topnotch shooting-war soldiers . . . yet, until you have tested them by actual fire, you can never be sure.

On the other hand, if he is a jumper, he will fight . . . you can be sure of that.



Airfield Eliminated

LIEUTENANT COLONEL C. B. DeGAVRE

An aircraft that can make a vertical ascent and then fly off is a possibility the Army isn't overlooking

THE convertaplane is a startling idea in an airplane and one that usually brings incredulous smiles to the faces of people hearing about it for the first time. But actually the convertaplane—an air vehicle which combines the vertical take-off, vertical descent and hovering characteristics of the helicopter with the horizontal flight speeds of conventional fixed-wing airplanes—is something to be serious about. The convertaplane promises to give the airborne warrior an airplane that is adapted to his peculiar needs.

World War II cargo planes and successors of them developed since the war had both good and bad points, but none of them measured up to the airborne outfit's every need. The faithful C-47 was a simple conversion from the DC-3 in use by the airlines. The C-47, C-46 and C-54 carried the burden of troop and cargo movement and performed most admirably, though called upon to perform tasks for which they were not originally built. They were not ideal for delivering airborne forces or for carrying heavy equipment since their side doors made loading extremely difficult; it was practically impossible to load anything larger than a jeep. They served remarkably well and their many creditable feats are recorded in martial history.

The growing demand for transports to meet the needs of the airborne forces resulted in the C-82 which came into service after the war. Rear straight-in loading, a floor at truck-bed height and a rectangular cross-section cargo compartment, are a few of the features which made the plane attractive. Also, two parachute doors made possible the jumping of greater numbers of troops and in a shorter time than had been possible from the old C-47. Although a vast improvement, the C-82 had its faults and has now been replaced by the C-119B which is of the same general configuration but improved in several respects. In the heavy-cargo class the C-124 has been developed as a major modification of the C-74, to carry fifty thousand pounds of cargo. This plane will carry practically all of the equipment of an infantry division except the medium armor. Although neither the C-119B nor the C-124 are in service in significant numbers, they represent types which vastly improve the capabilities of the armed forces in air transport. From five thousand pounds in the C-47 to ten times that figure in the C-124 is a vast improvement indeed.

A third and more recent step forward in air transport which is worthy of note is the C-120, which is a plane whose cargo compartment is detachable. This offers a potential saving in time by allowing the preloading of cargo compartments not requiring the plane to remain idle during loading and unloading op-

---

LIEUTENANT COLONEL C. B. DE GAVRE, Infantry, is on duty in the Pentagon. He is a graduate of the Military Academy, class of 1933.

erations. The pack-and-carrier principle, as it is called, materially reduces the turnaround time of the carrier, thus allowing more flying per unit of time and in turn more troops and cargo delivered. The only idle time should be for refueling and maintenance.

THERE is reason to believe that we have gone as far as we can reasonably hope to go with conventional aircraft. The development of large transports creates major difficulties in logistics. Certainly there is a limit beyond which we cannot go in the size and weight of conventional aircraft without paying a disproportionate penalty in surfacing materials and heavy construction equipment required for preparation, operation and maintenance of airfields.

It was very forcibly impressed on military logistical planners of the past war that the tonnages of landing mats required for even a single strip were staggering. Pierced-steel planking for a single runway of six thousand feet will weigh approximately 1,100 tons. Concrete for the same runway may amount to fifteen times that figure.

(For obvious reasons we are confining this discussion to purely military aircraft which will be required to operate all over the world and particularly those types which may be used tactically. Airplanes used by the airlines and by MATS for airline type operations will normally encounter the best facilities which can be provided at established bases along the air routes of the world.)

THE big question is: Can we afford giant fixed-wing cargo planes? Anticipating a demand far greater than the supply in a future war, the answer might well be no. Helicopters are sometimes suggested as a solution to the problem, but for one thing they don't require a heavy and costly landing strip. But there are definite limitations in the speed and range of present helicopters. They cannot now or in the foreseeable future compete with fixed-wing transports except over extremely short ranges. Why not then seek a solution by combining the best features of helicopters and fixed-wing airplanes, producing an air vehicle which is totally independent of airfields as we know them? What could be more logical than the convertaplane—a machine that combines usable features of both types of aircraft?

The convertaplane is not a new basic principle, for the idea was conceived years ago and an airplane approaching the convertaplane flew in 1936. It is, however, proposed that the convertaplane might be the solution to lessening an overwhelming logistical burden.

A Simple Problem

*(The following verse was taken from a talk by Mr. Gerard P. Herrick, President of the Convertoplane Corporation, at the first Convertible Air Congress in Philadelphia last year. He credited it to one Al Davis, otherwise unidentified.—*THE EDITORS.)

"Design a plane"; the head men say,
It must be built in such a way
That the dumbest mug can fly hands off,
Make the hardest landings still feel soft,
Make up for brains that the pilot lacks
Make the seats lean forward and still lean back.—
It must be safe and in the main
Be able to stand a hurricane.
It must be fast and not land hot,
(What a helluva job the designers got)
Fast and light and comfortable, too,
With a cruising range to Timbuctoo,
Of course, this is no common hack,
But must carry the load of a ten-ton Mack,
It must climb straight up and land straight down,
But the pilot must scarcely feel the ground.
And one last word the head men say,
"It's gotta be finished by yesterday."
On second thought there's one thing more,
"They'll have to sell at the ten-cent store."

THE aircraft industry is interested in the convertaplane and is prepared to develop it. It may be that the first prototypes will be small, for research purposes and to allow us to study the possibilities of replacing fixed- and rotary-wing aircraft organic to the combat arms and services of the Army with convertaplanes. However, there appears to be no limit to the ultimate size.

ALTHOUGH it is far too early to say that a convertaplane may ever entirely replace parachutes as a means of getting combat troops into an airhead, it offers us the opportunity of delivering a far larger percentage of the Army to participate in an airborne assault. This would mean an army which is airborne in fact.

It would materially reduce the logistical support for air operations through its total independence of fixed or temporary airfields. No pierced-steel planking or the equivalent and no heavy engineer equipment for construction would be required. Landing areas will no longer be selected because a vast, level area is needed for long-standing strips. With the convertaplane troops can be landed at the most advantageous position to accomplish their assigned mission without regard to suitability of the terrain.

In the past, the marshalling areas and take-off fields were a beehive of activity with planes and gliders lined up ready for take-off. The feasibility of such a concentration has depended in large measure on enemy air opposition being so weak as to be incapable of serious interference. If the enemy could afford tactical use of the A-bomb, what better target could he hope to find than a concentration of aircraft and troops which potentially are able to strike anywhere within range of the transports? With the convertaplane no such target need be presented since the aircraft of a group and the troops to be lifted could be dispersed over large areas, in small clearings, and farmlands.

THE possibility of being totally independent of airfields in the objective area is even more attractive. If the convertaplane were available to combat units in numbers, either organic to them or furnished by a supporting service, they could shuttle troops over swamps, rivers, mountains, defiles or other barriers where surface transport cannot operate. Time, surprise and tactical advantage would be gained for the Army by possessing such aircraft in numbers.

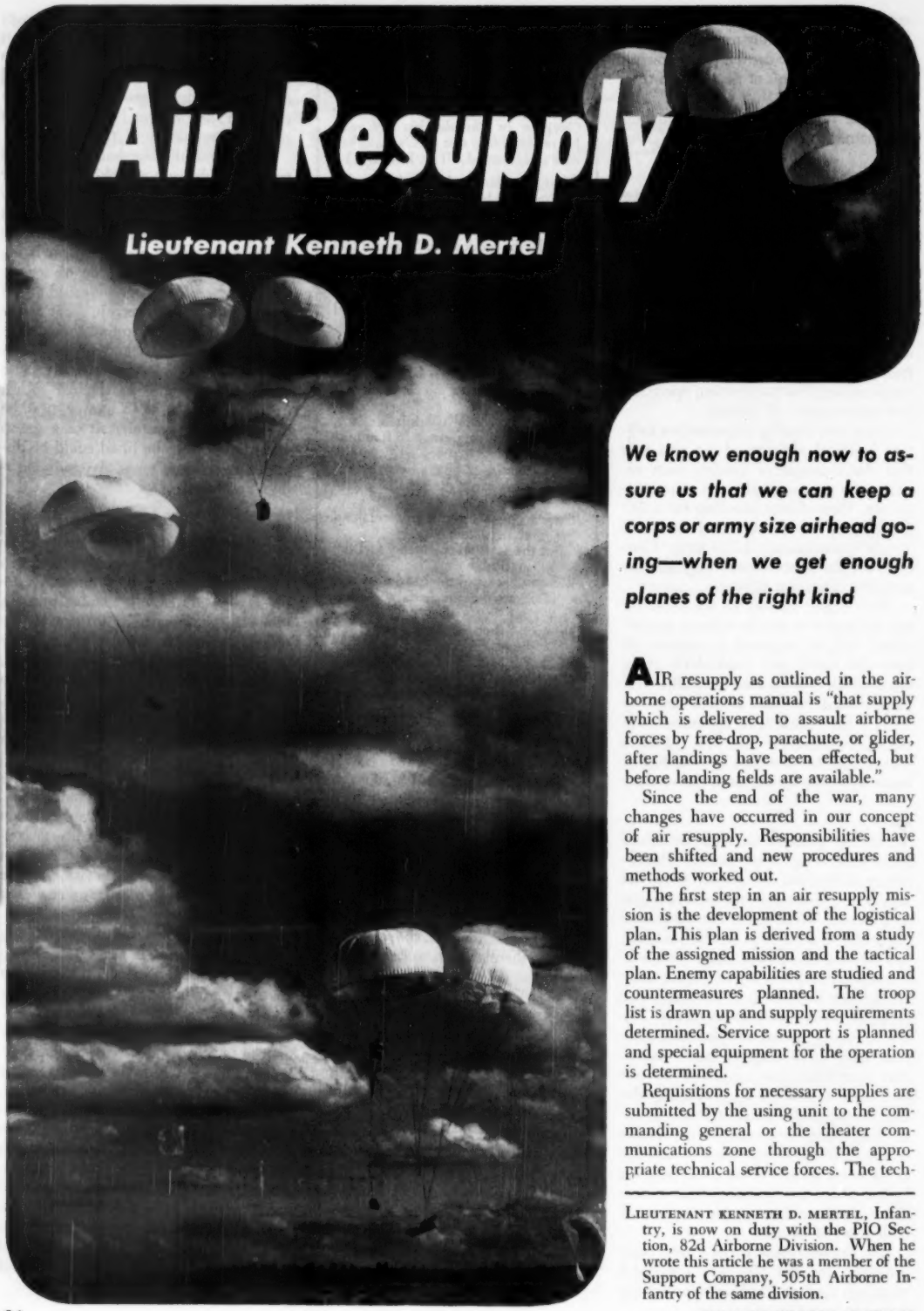
Employed under cover of fighter protection, low-level operation to take advantage of natural terrain and defilade is possible as well as the ability to continue flight operations under conditions of low ceilings and reduced visibility, the prevalence of which was so costly at Bastogne.

Convertaplanes would allow attacking troops to retain their aircraft for withdrawal if required or for moving from place to place in the target area, acting as the cavalry once did in cutting communication lines and destroying installations. Obviously a degree of air superiority would be required but that factor must be considered in any air movement.

The lot of the infantry can be improved. The mudslogging, mountain climbing and river crossing can be a thing of the past. Although the convertaplane is not here today and is in fact some way off, the helicopter may be used extensively for troop transportation as a forerunner to it and no longer need there be geographical barriers to land combat.

Air Resupply

Lieutenant Kenneth D. Mertel



We know enough now to assure us that we can keep a corps or army size airhead going—when we get enough planes of the right kind

AIR resupply as outlined in the airborne operations manual is "that supply which is delivered to assault airborne forces by free-drop, parachute, or glider, after landings have been effected, but before landing fields are available."

Since the end of the war, many changes have occurred in our concept of air resupply. Responsibilities have been shifted and new procedures and methods worked out.

The first step in an air resupply mission is the development of the logistical plan. This plan is derived from a study of the assigned mission and the tactical plan. Enemy capabilities are studied and countermeasures planned. The troop list is drawn up and supply requirements determined. Service support is planned and special equipment for the operation is determined.

Requisitions for necessary supplies are submitted by the using unit to the commanding general or the theater communications zone through the appropriate technical service forces. The tech-

---

LIEUTENANT KENNETH D. MERTEL, Infantry, is now on duty with the PIO Section, 82d Airborne Division. When he wrote this article he was a member of the Support Company, 505th Airborne Infantry of the same division.

nical service forces procure the supplies and package them for shipment to the port of aerial embarkation. There the Transportation Corps takes over, transporting supplies to the combat troops *via* the Air Force.

The port of aerial embarkation, operated by the Transportation Corps and assisted by the technical services, packages all supplies for aerial delivery by parachute or air transport, including packing in aerial delivery containers and attachment of parachutes. They are responsible for all special equipment necessary for loading aircraft. Liaison and coordination are maintained with the Air Force and with the unit air resupply officer, division or corps, in order to coordinate resupply missions and pass on requirements for emergency air resupply missions.

The Air Force provides the aircraft for resupply from departure airfield to arrival airfield or unit drop zone, and in the case of parachute air resupply, assisted by technicians from the port of embarkation, it drops supplies to the combat troops. Liaison is maintained with the port of embarkation and combat unit, corps or division.

IN parachute air resupply missions, the combat troops recover required supplies from the drop zone. For the air-landing of supplies, the aerial port of debarkation is operated by the Transportation Corps, assisted by the other technical services. The technical services are responsible for establishing necessary supply points. Liaison is maintained with the Air Force regarding aircraft, schedules, and so on, and with the unit, division, corps or army, in the establishment of supply dumps and installations.

The using unit is responsible for drawing required supplies from technical service supply points (or recovery from the drop zone in the case of air resupply) and the establishment of unit supply points for issue to subordinate units. Liaison is maintained with the aerial port of debarkation for the purpose of coordinating supply requirements. In air resupply, the using unit may be responsible for recovery of containers and parachutes from the drop zone.

To briefly summarize, the Army is responsible for the procurement, packaging and loading of supplies. The Air Force is responsible for flying supplies to drop zones or arrival airfields. There the Army takes over, unloading the aircraft and establishing supply points.

The concept of air resupply for Exercise Swarmer varied a little from that outlined here. In this article I am confining myself to the resupply by parachute of the 82d Airborne Division from D plus 1 through D plus 4. Other outfits were involved in Exercise Swarmer, notably the 11th Airborne Division and a small part of the 3d Infantry Division.

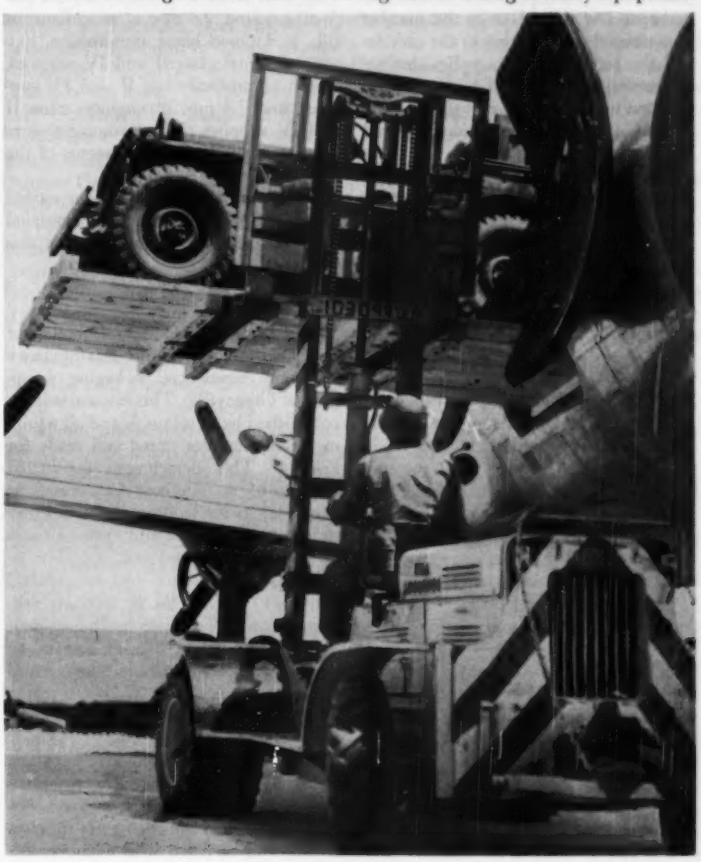
THE Commanding General, V Corps, directed the mission of the 82d Airborne Division. With this mission in mind, the tactical plan was studied, enemy capabilities determined, and countermeasures planned. The troop list was established by V Corps. Based on these facts, the general supply requirements and special equipment were determined. These facts made up the division logistical plan.

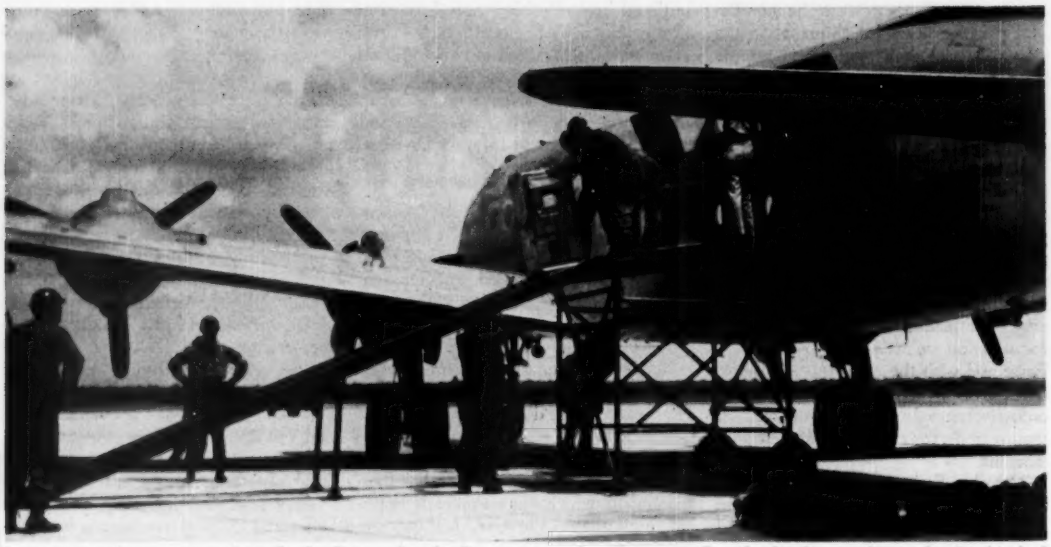
The next step was to get the supplies. Requisitions were submitted to the technical service agencies, Carolina Base Command, which was set up early in the planning phase. The CBC had two sections, one serving as a theater communications zone, responsible for operation of the marshalling area and procurement and assembly of supplies to support the operation. A second section consisted of miscellaneous port and technical service units which had the mission of establishing supply points within the airhead. In a tactical operation, this latter function normally would be carried out by army service units.

The required supplies were assembled at Greenville Air Force Base. At this point, the 82d Airborne Division was given the responsibility for the packaging, attachment of parachutes and loading of aircraft, including ejection of bundles over the drop zone, a job normally the function of the Quartermaster and Transportation corps. This was necessary because men of the technical services hadn't been trained in the work.

All equipment, including parachutes and aerial delivery containers, was fur-

A fork-lift lowers a jeep to the ground from the door of a C-54 during Exercise Swarmer. The C-54 is unsatisfactory in airborne operations; its door is too small and too far off the ground for efficient loading and unloading of heavy equipment.





Some inegenious contraptions for loading and unloading were used at Swarmer. But the fundamental cure for this kind of slow back-breaking stevedoring is clamshell doors which are adjustable to truck-bed height or can be dropped clear to the ground.

nished from the equipment of the 82d Airborne Division. Due to the number of personnel participating in the exercise and the lack of actual supplies that accompanied units in initial assaults, the Division was able to support this requirement. Under combat conditions it would not be possible.

The largest artificial element entering into the parachute air resupply was the many duties normally done by communication zone troops that were given the 82d Airborne Division. Normally the Division would have been concerned only with recovery of supplies from the drop zone.

THE division logistical plan called for dropping of 230 tons of supplies by parachute. This consisted of 34 tons on D plus 1, intended primarily for the one regimental combat team that parachuted in on D-day, and replenishment of supplies for consumption on D plus 2, plus several tons of additional gasoline. Ninety-nine tons were to be dropped on D plus 2, replenishing stocks of all units and providing some build-up for subsequent use. On D plus 3, 34.5 tons were to be dropped. An emergency "on-call" drop on D plus 4 consisting of 63 tons was planned. Commencing on D plus 4, it was anticipated that the division would draw supplies through supply points established by Carolina Base Command at the two arrival airfields.

The tonnages listed above consisted of 87.8 tons of rations, 4.5 tons of water, 72.7 tons of R-72 gasoline, 6.8 tons of V-80 gasoline, 2.8 tons of miscellaneous oils, 36.8 tons of blank ammunition, 10.6 tons of signal class II and IV supplies, .9 ton of medical class II and IV supplies, and 7.4 tons of engineer class II and IV supplies. These tonnages were based on the actual requirements of the division.

Resupply of live ammunition totaled about 282 tons daily, but was simulated and no aircraft were allotted for this purpose.

ON D minus 14, the detachment of the Division Parachute Maintenance Company commenced packaging of supplies at Greenville. This mission was accomplished by D minus 4, and all equipment and supplies stored and ready for loading. This detachment conducted training of its own and Quartermaster personnel in the loading of the delivery containers in aircraft and ejecting them over simulated drop zones.

It was originally planned to use C-82 and C-119 aircraft for all resupply missions, using both monorail and door bundles. But these planes had to be used to transport parachute echelons and heavy equipment, such as 2½-ton trucks and 105mm and 155mm howitzers. So C-46s were use for resupply.

The Division planned to use twelve C-46s on D plus 1, twenty-four C-46s and six C-82s on D plus 2; twelve C-46s on D plus 3, and the emergency drop on D plus 4 to be flown with whatever aircraft were available. Each C-46 would carry 35 to 40 bundles averaging 200 pounds, total load three tons, to be physically manhandled from the plane. This would require several passes over the drop zone. The C-82s were to be used with heavy containers weighing 1,500 pounds dropped with 48- to 64-foot parachutes, ejected at one pass over the field.

Standard aerial delivery containers were used. These included the H harness webbing and A-7 sling used to package rations, gasoline, blank ammunition and other boxed supplies. (Six ration boxes, C or 5-in-1 type, or three 5-gallon water or gas cans are a sample type load and weigh from 150 to 240 pounds.) Bulky items such as blankets were packed in A-10 nets with H harnesses attached to lend strength and provide attachments for the canopies. Medical supplies and other items subject to damage were packed in A-4 and A-6 containers with shock pads attached. Engineer supplies (barbed wire, drift pins, nails, and such) were packed in A-5 containers. Rolls of concertina wire were dropped with H harnesses with the wire banded together to keep it from breaking apart.

The parachute was the standard 24-foot G-1 canopy, capable of dropping up to 300-pound loads. Various colors were used to designate the class of supply: The red canopy for all class V and III supplies; green for all class I; blue for engineer class II and IV; yellow for signal class II and IV; and white for

medical class II and IV.

The heavy-drop containers consisted of a heavy canvas case, 48 by 54 inches in size with canvas webbing risers, four and a half feet in height. They were constructed to form a box when the risers were brought together and the parachute attached. When disconnected (by means of a clevis and U-bolt between risers and suspension lines) the sides collapsed, giving easy accessibility to the load. The bottom was reinforced with a sheet of plywood 4 by 4 feet, to provide a smooth surface for movement on roller conveyors when loaded. These containers were each loaded with 1,500 pounds of rations. A load up to 2,500 pounds to 3,000 pounds may be used in a similar manner by making a more sturdy and reinforced container or sled.

A G-5 canopy in two sizes (48 and 64 feet) was used with this container. The clamshell doors of the C-82 were removed; a series of roller conveyors placed on the floor, two wide and three deep. Six of these heavy containers were placed on the rollers in line. They were all lashed together in trail, so that when the first one slid out, it would pull out the rest. Static lines were attached to each bundle and each one opened independently of the other. At the proper moment over the drop zone, the bundles were unleashed from the aircraft except the last bundle in the front. When over the T this container was released, the normal tilt of the aircraft to the rear was enough to slide the bundles down the roller conveyors and out.

These containers permitted maximum use of space. Nine thousand pounds were dropped from each C-82, where with monorail and door bundles, the limit would be about 5,000 pounds. This 9,000-pound limit can be increased to the maximum limit of the aircraft by the use of larger bundles and the 64-foot canopy. Sleds similar to those used in the drop of a quarter-ton truck with one 100-foot canopy or the 105mm howitzer with two 100-foot canopies may be used in a similar fashion. The cases of supplies are loaded and lashed down. This is a good way to drop ammunition. The tonnage is limited only by the load the aircraft can carry.

IT was impossible to remove the large cargo door in the C-46 and so all bundles had to be dropped from the small cargo door. The bundles were loaded near the center of gravity of the aircraft and when near the drop zone, were dragged or carried to the rear and tossed out. The C-46 was not equipped with anchor-line cables, and so a makeshift method was used to fasten the static lines. Men sometimes got tangled in the lines, endangering their lives and the safety of the aircraft.

Paratroopers roll and pack an A-5 container that will be dropped from a plane.

The drop went off as planned on D plus 1. The planes came over in Vs of three, in trail, 1,000 feet apart. The aircraft made two passes, ejecting eighteen tons of supplies, primarily gasoline. During these two passes, several men became tangled in the static lines and several parachutes blossomed in the aircraft and caught on the surface of the door and had to be cut loose. The drop was called off. Under wartime conditions the risk would have been taken, but someone might have been killed or injured. All further C-46 flights on air resupply missions were cancelled.

To remedy this, the D plus 2 drop went ahead with the six C-82s using the heavy-drop technique with large bundles, plus an increase of seven additional C-82s using monorail and door bundles. This mission dropped 51 tons of supplies, all rations, on the afternoon of D plus 2. This alleviated the shortage of rations, but the Division was still very short of gasoline and continued to be short until D plus 4, when gasoline was received through Carolina Base Command supply points at Pope Air Force Base.

This was the end of the resupply missions. Of the 230 tons of supplies scheduled to be dropped only sixty-nine were actually delivered. This very clearly proved that the C-46 type aircraft were not suitable for air resupply missions.

The drop with the C-82, both with monorail and door bundles and using the heavy-drop technique was successful. The use of the heavy-drop was highly successful, permitting maximum tonnage to be delivered quickly and in a short space on the drop zone, thus providing easy recovery.

Recovery of supplies on D plus 1 was by the regimental combat team with some assistance from the division quartermaster. The responsibility for recovering all supplies on D plus 2 was assigned the division quartermaster. These supplies were recovered by seventy-five men and several quarter-ton trucks and trailers; heavier transportation being unavailable in the airhead. The supplies were recovered successfully and placed in supply points established by the Division technical services.

The recovery rate was about ninety-eight per cent with the heavy-drop technique and monorail and door-bundle techniques from the C-82s, with only a few bundles being damaged on contact with the ground or lost in the trees or heavy brush. The rate of recovery on the C-46 drop on D plus 1 was not so good as much gasoline was wasted when bundles came apart in the air because of high speed and too much altitude. Many gasoline cans came loose from their con-

A 40mm antiaircraft gun loaded and lashed to a sled, ready to be loaded and dropped from a C-119 using the heavy-drop technique.

The Chase XC-123 assault transport has an adjustable clamshell door capable of bearing as heavy a load as the plane can carry.

tainers in the air, made free falls, resulting in ruptured containers. Some rations were lost in a similar manner. Rate of recovery was about seventy per cent.

IN summary, it can be said that the supply of the Division by parachute for three days as planned, was not a success. If the situation had become critical it would have been necessary to halt the movement of equipment and troops into the airhead in order to release the required aircraft for air resupply.

The exercise was a success in that it proved that an airhead can be supported by air. The exercise furnished the various services valuable experience in working together. An airborne operation requires close coordination, which can only be attained through such exercises.

The maneuver proved that the C-82 and C-119 are the best aircraft we now have for parachute air resupply. Using the heavy-drop technique with heavy containers running 2,500 to 3,000 pounds with 64-foot parachute gives maximum use of aircraft. There is no limit to the size of the containers, except the size of the aircraft. The heavy sleds used to drop trucks and howitzers with one or two 100-foot parachutes are practical. The C-82 with a maximum load of 14,500 pounds could eject the entire load with two or three sleds with multiple 100-foot parachutes. This load of course is cut down by the amount of gasoline required to fly the required distance to the drop zone. The C-119 with a maximum load of 24,000 pounds could use three or four of these same size sleds with multiple 100-foot parachutes.

The heavy-drop technique does not require a prepared drop zone. A sled load of artillery ammunition could be pinpointed right into the gun position. Gasoline, rations, and so on, can be dropped within a few hundred yards of the selected dump site, doing away with the need for a lot of transportation to move the supplies from the drop zone.

Recovery becomes quite simple. The advantages of recovering one large bundle weighing three to five tons, instead of fifty to seventy-five small bundles from a large, widely dispersed area are obvious. The advantage of dropping heavy ammunition within two hundred yards of the gun position, ready for almost instant use, suggests interesting possibilities. The heavy containers could be dropped on a pinpoint, much the same as a bomb. Accuracy should be very high. Using this technique, the whole parachute air resupply system is made more efficient, quick and practical.

The monorail in the C-82 and C-119 is not practical for parachute air resupply because of its small capacity (fifteen 300-pound bundles on the C-82 and twenty 500-pound bundles on the C-119). The monorail is effective in dropping supplies that accompany a paratroop unit on the assault.

Fitting a bundle to the monorail of a Fairchild C-119.

Certain experimental aircraft such as the C-97A have monorails capable of discharging eighty-five 500-pound bundles weighing a total of 21 tons. This still means picking up small individual bundles from a widely dispersed area, rather than from a central location.

I visualize the need for aircraft built along the lines of the C-119 and C-124. The C-119 is capable of transporting parachute troops and equipment. Both aircraft are capable of air-landing of large quantities of equipment and personnel. When air-landing, they both have the capability of rapid unloading with the use of large doors and self-contained loading and unloading ramps. The C-119 operates very efficiently in the use of the heavy-drop technique of supplies and equipment.

The C-54 and C-74 type aircraft do not possess many of the advantages for the movement of equipment or supplies because they do not have unloading and loading ramps and their doors are not large enough to permit rapid loading and unloading of large pieces of equipment. The C-74 can load a 2½-ton truck and other heavy equipment with the use of the built-in elevator, but it is a slow and laborious process, which will tie up loading schedules and critical airfield space.

It is true that the C-46, C-47, C-54 and C-74 aircraft would have to be used in an emergency and are capable of carrying light equipment and supplies in a manner similar to that on Exercise Swarmer. Necessarily, our loading techniques and operations must include training in the use of these aircraft. It is important that the continued development of aircraft be directed toward those more desirable types such as the C-119 and C-124 rather than those obsolete aircraft lacking required capabilities.

The development of assault transports and assault-type gliders is a definite need.

Large cargo-carrying helicopters have a place in future operations when they become capable of transporting large loads, in particular armored vehicles and heavy bulky supplies to a small landing area. Although their slow speeds make them vulnerable to enemy aircraft, they still may be used.

The use of pods or packets that can be flown to a field or dropped in a forward area and unloaded at leisure while the powered tug goes back to secure more packets suggests many interesting possibilities.

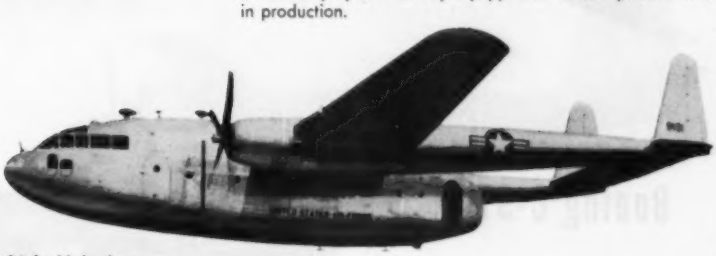
USAF MILITARY TRANSPORTS

Some have features of use to the Army, some haven't

Douglas C-124

This giant transport has four engines and will carry 50,000 lbs. of pay load. Clamshell doors in the nose of the plane provide an opening 11 ft. 8 in. high and 11 ft. 4 in. wide. It has a built-in ramp for wheeled vehicles and an electrically operated elevator. The cargo compartment is 12 ft. 10 in. high, 13 ft. wide and 77 ft. long. It can carry tanks, artillery pieces, bulldozers and other heavy equipment. As a troop transport it can carry up to 222 fully equipped men. This plane is now in production.

Fairchild C-119

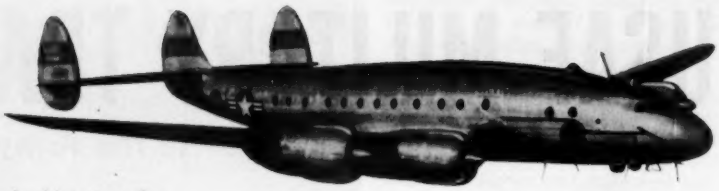


This bigger and better version of the C-82 has more powerful engines, and a larger cargo compartment among other features. The cargo compartment is 36 ft. 11 in. long, 9 ft. 2 in. wide, and 7 ft. 8 in. high. The floor area is 353 sq. ft. and the cubic area 2,700 cu. ft. It'll seat 64 combat-equipped men and has a monorail system capable of handling 20 500-lb. bundles. Its load capacity is over 30,000 lbs.

Fairchild C-82

This two-engined cargo ship was the first plane specially designed and produced for transporting paratroopers and other ground combat troops. It appeared after the war was over and was the Army's standard troop transport until the appearance of its bigger brother, the C-119, last year. The cargo compartment is 28 ft. 6 in. long, 8 ft. wide, 7 ft. 8 in. high. It has 308 sq. ft. of floor area and a usable capacity of 2,312 cu. ft. The cargo compartment floor is at truck height. It will carry up to 22,712 lbs. It has a monorail with a capacity of 15 350-lb. bundles. Forty-one combat-equipped men can ride in it. A modified version of the C-82 has been tested as a medium assault transport.

Lockheed C-121

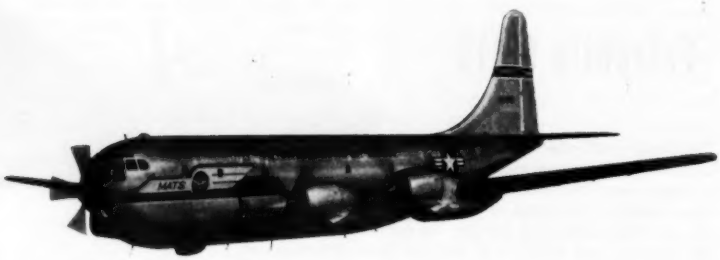


This is a military version of the Constellation airliner. It is powered with four engines, each churning up 2,500 horsepower on take-off. It will carry a pay load in excess of 6,000 lbs. 4,000 miles. It has a cruising speed of approximately 290 mph at 20,000 feet. The Air Force purchased 10 C-121s. Nine of them are cargo carriers and one is a passenger ship.

Consolidated-Vultee XC-99

This is the cargo version of the big B-36 bomber. It is designed to carry 400 fully equipped combat troops, 305 litter patients with 20 attendants, or 100,000 lbs. of cargo. It is a double-decked six-engined ship, capable of 300 miles an hour and a range of 8,100 miles. Only one experimental model has been built.

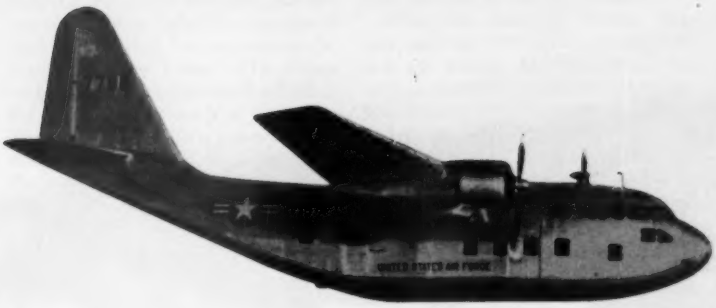
Boeing C-97



Patterned on the B-29 Superfortress bomber, this four-engined transport is designed for long-range flights. As a troop transport it will carry 137 fully equipped combat troops. As a hospital ship 83 litter patients and four attendants can be carried. It can carry a maximum payload of 68,000 lbs. and has a maximum range of 4,000 miles with lighter loads. The plane is now in production.

Douglas C-74

This four-engined transport has a top speed of over 300 mph and a range of approximately 5,000 miles. It will carry a useful load of 25 tons, or 125 fully equipped troops. It has a built-in cargo elevator for handling heavy loads. It is no longer in production. Two other well known Douglas transports are the two-engined C-47 and the four-engined C-54.



Chase XC-123

This twin-engined assault transport was designed to be used for cargo transport, troop transport, evacuation of wounded, and rescue operations. It can carry 60 fully equipped troops or a cargo load of over 20,000 lbs. It has a rear-opening clamshell door which makes it simple to load wheeled vehicles. The cargo compartment is only 31.6 inches from the ground. The loading ramp may be lowered or raised to intermediate positions, thus making it easy to load it direct from truck or cargo platforms. It has a cruising speed of 205 mph, a top speed of 245 mph, and a landing speed of 85 mph. It has a combat radius of 750 mi. carrying 8,000 lbs. of cargo.

Chase YC-122

This twin-engined troop-carrying assault transport is a modified and powered version of the CG-18 cargo and troop transport glider. It is designed to carry a useful load of 12,000 lbs. Powered vehicles can be loaded under their own power by ascending the ramp formed by lowering the main door in the rear of the plane. Heavy loads without power can be loaded by a cable running from the load through the plane and out the nose wheel well to a source of power. It will carry 30 fully equipped troops who can load through the main rear door or through the side doors. It was designed for short take-off and landing runs, permitting its use at forward airfields. It cruises at 200 mph with a high speed of 240 mph. Its landing speed is 85 mph. Its range is approximately 1,000 miles with normal load.

Northrop C-125

This three-engined plane comes in two versions. One is for assault landings and the other for Arctic rescue work. It carries a load of 15,000 lbs. in an assault mission. The ramp door permits straightaway loading of vehicles and cargo through an opening 15 ft. 5 in. long, 9 ft. wide and 6 ft. 6 in. high. When used in assault work the C-125 has a radius of 850 miles. For ferrying its range is 1,856 miles. Sixteen double seats accommodating 32 passengers can be installed. It has a fixed landing gear and dual-swivel tail wheel. The Air Force is buying 13 of the assault versions of this plane for Army use and 10 of the rescue version for its own use.

DRAGONFLIES OVER KOREA

An L-4 in Korea is loaded with caliber .30 ammunition before taking off on a resupply mission.

Lieutenant George L. Ragle

THE "Dragonfly," the light liaison plane, has proved itself in Korea. The 1st Cavalry Division has done things with it besides directing artillery fire and locating the enemy and detecting his movements. Dragonflies have directed air strikes by fighters and bombers and made air drops to isolated units. And they have brought out wounded fighting men.

The division doesn't consider such jobs experimental. In Korea they have become part of the day's work.

The Air Force did a lot of its own control work, both from the air and on the ground. But the division's own planes were over practically the same area every day. And they were in constant contact with G-3 and G-2, who knew the problem at that moment. So the men in the Dragonflies knew where our own troops were, and it was a lot easier for them to do these new chores. They were already there, so why shouldn't they?

LET Captain William J. Maddox, a veteran liaison pilot, tell how he operated: "Sometimes we watched a suspected area for hours," he said, "before an artillery battery fired or vehicles moved where we could pinpoint them. We often pretended to go away and then came sifting back over a hill. One of our pilots watched a culvert where North Koreans were assembling. When he thought he had a worth-while target he called for an air strike. One rocket glanced into the culvert before it went off. Later we counted about fifty bodies in there. None got out alive."

The light aircraft section has the only planes in the division with regular shackles, one under each wing. So they could easily drop ammunition, rations, ice (for water) and messages to units cut off by the enemy or isolated by impassable roads.

Liaison planes do no bombing or firing, for they aren't built for that kind of work. But they do get damaged by small-arms fire because they work well below the thousand-foot level except when directing artillery fire.

The division lost only one Dragonfly

LIEUTENANT GEORGE L. RAGLE is a member of the PIO staff, 1st Cavalry Division.

from the first combat missions south and east of Taejon on July 23 to the time of our landings. And that loss was not the result of enemy action. The engine conked out and the pilot tried to land on the river bank just north of Waegwan. The plane, an L-5, hit a power line and dove straight into the sand. Both men in the plane suffered broken arms and face cuts. Another L-5, which had landed to give help and survey the damage, was damaged on take-off by the same line.

THE division light aircraft section has L-5s, L-4s, and L-17s. Its two groups are artillery and liaison. The chief job of the artillery aircraft is to locate targets and direct fire on them. But they also report movements of the enemy and, just as the liaison planes, direct artillery fire on targets they happen to spot.

Each of the four artillery battalions has two planes and division artillery headquarters also has two. The division liaison group has eight planes. The air officer coordinates both groups.

On June 26, the day after the North Korean invasion, the section went on a seven-day week to ready its planes. The planes were painted with olive drab camouflage.

The planes began moving to southern Japan on July 15. There they were joined by planes from the 7th and 25th Infantry Divisions, and two days later three-plane flights began to Pusan where the pilots were briefed and ordered to Pohang. To avoid fire from guerrillas, the pilots were told to follow the east coast line and fly just off the shore.

When they landed at Pohang, there were only ten F-51 fighters on the field and the enemy was thirty-five miles away to the north. From there the pilots flew division staff officers over the terrain to learn it before the troops went into action. All aircraft were moved to Taegu on July 21 to get them closer to the front. The pilots did their own maintenance and had all planes ready for action when the ground party arrived on July 23.

It was then that the L-17s took over liaison and fire direction work for the 24th Infantry Division in its withdrawal south and east of Taejon. On the 23d, part of the section moved forward to Kumchon but later withdrew on July 31.

L-4s and L-5s made twenty-three ammunition, food and message drops during the last week of July. Their pilots successfully led an infantry company out of enemy territory. And they resupplied units of the 25th Division which had become cut off for a while in the withdrawal.

Air drops were made to the division reconnaissance company and units of a regiment on August 13. An outpost of the British 27th Brigade was supplied with air drops on September 6 when roads became impassable because of heavy rains. At this time ice was first used to provide water. The section had no cargo parachutes or special water containers which would stand the drop.

During July and August, the division's light aircraft section flew 829 combat missions during 1,319 combat hours.

HERE are some of the lessons they learned:

A division radio station should be able to get contact with all its aircraft all the time. Reaching individual planes slows up information and operational facilities.

All new aircraft should have bomb shackles rigged so they can be operated individually or simultaneously.

L-17s should have more radio channels in order to operate with fighter planes without interference from planes on other missions.

All division aircraft should have VHF (very high frequency) radios for intercommunication.

For sustained operations after landing, maintenance personnel and equipment should be flown or sent in as soon after these operations are to begin as possible.

Light aircraft sections should have their own mess because of the distance they work from division headquarters and their irregular mess hours.

It was very useful to have an officer from division G-2 to question pilots and observers after their missions.

Helicopter in Korea. A Marine Corps "flying banana" carries wounded back to a field hospital.

WHO SHOULD COMMAND

TACTICAL AIR FORCES?

We ought to go back to Douhet and put tactical aviation under Army command

LIEUTENANT COLONEL WILLIAM R. KINTNER

MILITARY concepts have the disconcerting habit of changing from "radical" to the "conservative" in a short span of years. Less than a generation ago the idea of an independent Air Force was sacred to a group of officers of the Army Air Corps, but thoroughly condemned by orthodox Army officers of the ground

---

LIEUTENANT COLONEL WILLIAM R. KINTNER, Infantry, is a frequent contributor to this and other service magazines. He is the author of *The Front Is Everywhere*, a study of the military basis of Communism, published last month by the University of Oklahoma Press.

combat arms. But in 1947, the idea became law. It had become reality during the war when the Army Air Forces were independent in all but name. This could not have come about without the acquiescence of the Army. But now, three years after the Air Force became independent, there are grounds for believing that the Army did not examine the tactical-air contents of the unification package too carefully. If it had, the Army might not have made an outright surrender of the control of tactical air forces.

The idea that the command of air forces supporting ground operations should be vested in the Army was the height of military orthodoxy in 1940. Today it is heresy. Yet the concept can be supported with more logic than our present method of using and controlling tactical aviation.

Douhet, apostle of the primacy of air power, recognized the necessity for maintaining land and naval forces. Douhet prophetically foresaw the development of two distinct types of military aviation: independent air forces, designed to carry out strategic air missions and "fitted to operate together with and coordinate to the Army and Navy," and tactical aviation, designed to supplement surface operations and therefore, "a part of the Army and Navy."

These latter air forces Douhet called, "The auxiliary aviation of the Army and Navy." The principles Douhet established for the organization of this auxiliary aviation are of standing interest, especially since they so exactly describe the current status of the Navy and Marine Corps air arms. As Douhet expressed them, auxiliary aviation must (1) "form an integral part of the Army and Navy." (2) "must be included in the budget of the Army and Navy." (3) "must be directly subordinate to the one and the other . . . not only as regards discipline, but also as regards the work which shall be required of it."

Douhet saw many advantages in the form of organization. Army commanders would learn "to estimate what they can expect and demand of this aerial means at their disposition." And the air units, thanks to constant contact, would "acquire confidence, so as to render the highest possible efficiency."

The concept of tactical aviation as an integral part of the Army was not only "in keeping with logical conceptions," asserted Douhet, but would also prevent "costly duplication of work, which may easily arise if the auxiliary aviation is practically independent of the Army."

After building his case, Douhet dismissed the now hoary and misleading argument "that aviation is something technical which must be left to technical experts to handle." He made short shrift of this: Technical experts "should never be expected to have the qualifications *for judging the qualities needed for the work for which the plane is to be used*, since they are not competent for this." The Army, Douhet held, should ask for what it considers desirable type aircraft and then it would be the task of "the technical air experts to study how best to attain these desirable features."

These contentions became clearer and stronger when considered along with his principal idea that "the essential mission of independent aviation should be . . . to win command of the air."

Most of Douhet's principal tenets concerning the organization and employment of independent air power have been incorporated into the doctrine and structure of the United States Air Force. Unexplainably his ideas about tactical air support have been ignored.

THERE would be no purpose served to recount here the whole long battle of Army airmen for an independent status. The logic of an independent air force designed to conduct independent missions is not questioned. Still we can profitably examine the surgery by which the independent air force was severed from its army parent. In the process what Douhet called, "an integral part of the Army" was also removed.

World War II was the midwife of the U. S. Air Force. The Army Air Forces won practical independence in the major reorganization of the War Department which took place on March 9, 1942. General Arnold's ideas had a strong influence in this reorganization. It was Arnold who drove home the point that the air force had become "a new and coordinate member of the combat team." No longer was it tolerable to permit "the subordination of one member of the team to the other," General Arnold said. Unity of command was still essential but it was to be gained by placing a superior commander "over both principal members of the combat team."

It is possible that the coordinate Army Air Forces was created to conduct the so-called strategic air operations. But once the ice was broken the theory of coordination was also applied to air power used in support of the army in land operations.

After the publication of Field Service Regulations, *Command and Employment of Air Power*, 21 July 1943, the very term, "air support," was proscribed. From that date on it was forbidden to attach "Army Air Forces to units of the Ground Forces," for such attachment would involve command. Instead, tactical air forces operations were to "be coordinated by means of timely planning conferences of pertinent commanders." With the publication of these regulations the days when American tactical aviation was "an integral part of the Army" were over. It followed naturally that tactical air operations were to be planned solely on a joint basis by Army and Air Force officers. It became improper to make an Army plan and then ask that AAF assistance be provided to help execute it.

By April 1944, just prior to Normandy, an Army Air Forces board carried further along the doctrine of independent tactical air forces by making this recommendation: "Command of all tactical air force units is vested in the tactical air force commander, *who is responsible only to the theater air forces commander* for the conduct of tactical air operations." This shoe, however, did not fit the other foot when applied to Army antiaircraft artillery, for, stated the board, "*all* antiaircraft artillery engaged in air defense operations . . . will be under the command of the tactical air force commander."

Just a year later, War Department Circular 17 announced that "final authority for the acceptance or rejection of requests submitted by Army rests with tactical air command and with the tactical air force for those requests submitted by army group." In this blunt fashion any remaining subordination of tactical air forces to Army control was ended. The final coup that destroyed any further hope that tactical air support would remain an integral part of the Army came with the unification act of 1947.

IN the European Theater, allied tactical air power played a decisive role. The thread running through 12th Army Group's evaluation of this campaign, entitled *Effect of Air Power on Military Operations*, was "Whatever criticism can be made of details of the air campaign as it unfolded, the underlying premise accepted by the American Air Force was sound." This evaluation held that the successful air support of ground forces depended upon the application of these basic principles (1) "that the support afforded conform with the military plan," (2) "that the air power applied achieve the maximum possible effect" and (3) "that the War Department doctrine on air matters be adhered to."

These basic principles were, in general, applied by our tactical air forces

and enabled the AAF to make an immense contribution to the success of the Allied campaign in Europe. But whether this successful application was the result of our command structure or was made possible by other factors is an interesting question that deserves exploration.

It is my opinion that the personal relationship that existed between our top ground and air commanders was the most important factor behind the successful employment of our tactical air power during World War II. The nature of this relationship was peculiar to that war and may not exist in the future. Personal relations between air and ground commander overcame the obstacles to effective tactical air support inherent in faulty command organization. Some of these relationships still continue. They may blind the Army to command flaws in the structure which promises to give the Army its tactical air support now and in the future.

Tactical air support for the Army in World War II was effective because it adhered to the principle that "the support afforded conform with the military plan." This did not just happen. In every theater in which large land operations were undertaken the theater commander was an Army general. He was the final court of appeal in matters of dispute between air and ground commanders. Next, at every command level at which cooperation was effected between tactical air and ground forces the Army commander was senior in rank, years and general military experience. These circumstances made it psychologically difficult for the junior general to oppose the aims of the Army commander. Finally, the AAF generals of World War II had been trained and reared in the Army. They had attended Army schools, they were familiar with Army organization, methods and tactics. They understood the aims of the ground commanders and were sympathetic to them. All of these reasons taken together tended to soften the status of the air commander's "coordinate" position. Despite the force of Field Service Regulations, the Army Air Forces generals were psychologically subordinate to the Army Ground Forces generals.

This condition will not last forever.

The independent air force will soon be commanded by generals who have much less association with the Army. (Korea was too close to World War II to make this trend evident.) Whether or not they support the aims of the ground commander will not greatly influence their careers. In substance they belong to a different team and are working in an entirely new atmosphere.

Members of tomorrow's Air Force will have also been subjected to a different indoctrination than were the generals who commanded the tactical air forces of World War II. The latter were exposed constantly to instruction in the decisive role of land operations and consequently in the vital importance of the tactical support mission.

TODAY the importance of the tactical air mission is subordinated in official Air Force training literature. The following is extracted from an Air Force extension course: "The basic concept for the pay-off on the over-all use of air power resides in the strategic application of that power . . . our air power is patterned to be applied internally to the enemy to devitalize him. The basic thing to realize is that *we would like to have every airplane or air missile being applied directly against basic targets;* however, some aircraft and air effort will have to be deployed to clear the way and to cooperate with surface forces in the execution of their mission."

With such indoctrination is it reasonable to expect that the commanders of independent air force units assigned to cooperate with the army will be under the same psychological stimulus to provide effective air support as their counterparts were in World War II?

The United States Air Force has been emancipated from Army control for approximately three years. During that period our independent air force has advanced its ability to wage strategic air war beyond its capacity to render tactical air support for the Army. Tactical air power capable of supporting land operations has suffered a relative slump. No matter what index one chooses to examine, whether it be type aircraft procurement, operational breakdown of air groups, or official publicity releases, the emphasis of the USAF has been on strategic, not tactical, air power. There is significance in the Finletter Report, *Survival in the Air Age,* which, devoted entirely toward recommending a program to build up the air force, did not even discuss the importance of tactical air force, did not even discuss the importance of tactical air power to our over-all strategy. In fact it does not even mention the term.

In the last year the status of tactical air power within the independent air force became a subject of public concern. In response to pressure, the Air Force began in 1949 to place greater emphasis on its Tactical Air Command. Yet even today the amount of effort devoted toward this aspect of air power is small in proportion to that put behind the strategical effort. Our plans for tactical air power imply essentially a secondary effort. The military agreement reached between the Chiefs of Staff of the Atlantic Pact nations at The Hague assigned primary responsibility to France and England for furnishing the tactical air support for the Western Union. This de-emphasis of U. S. tactical air power is quite a far cry from 1944-45 when the feared Thunderbolts of the Ninth Air Force ruled the skies over and in front of the American armies in Europe.

It is of course true that not all of the relative decline in American tactical power can be traced to the newly won independent status of the Air Force. Budgetary limitations have kept the Air Force from developing its 70-group program. As the Air Force grows larger the number of operational aircraft made available for tactical air support of the Army will increase. But an increase in the number of planes alone will not overcome the obstacles to effective tactical air power created by removing "an integral part of the Army" from its command.

THE command principles advanced by the Air Force for the control of tactical air forces are inconsistent with their own practices. A cardinal principle advocated by General Arnold and one on which the Air Force won its independence is: "Command is responsibility and should be matched by authority." The National Security Act of 1947 assigns the Army the responsibility "to be organized, trained and equipped primarily for prompt and sustained combat incident to operations on land." Since tactical air forces have a direct, integral and decisive influence on land combat operations is it reasonable to deny the Army commander any authority over their activities?

The Air Force tolerates no such restrictions over the command of Army units assigned to its jurisdiction. Antiaircraft artillery has no "coordinate" status in the Air Defense Command. (When the day arrives when ground-to-air guided missiles provide a more effective means of intercepting hostile bombers than jet fighters, will the Air Force advocate placing its fighters under a ground-controlled Guided Missile Command?)

Before testing the soundness of Army command of tactical air forces the implication of the concept should be defined. It means the authority to order, rather than request, tactical air support of

Operations room of the tactical air force of Operation Swarmer. Both friendly and enemy aircraft are spotted on the big board.

ground operations. It is exactly the same authority as a Navy task force commander possesses with respect to the fleet air arm, a Marine Corps commander with respect to Marine aviation, and, incidentally, that of the Red Army over its "air artillery." Command subordination does not imply interference on the part of the commander with the technical operations of the tactical air force. The commander of an Army corps is not concerned with how the artillery masses its fires on a given target, but he does have a vital interest in the targets the guns shoot at. Massing of effort, selection of planes, bombs, fuzing—these are problems of the tactical air commander, not the ground commander he serves.

The task of the senior Army commander in a given theater of operations is to seize or hold land areas vital to our national strategy. Within a given theater three battles may be raging simultaneously: an independent air war, a sea-air war and a land-air war. Unity of command now applies to the conduct of the air and naval campaigns but "cooperation" has become the guiding principle in the conduct of land campaigns. The Army commander is responsible for land war but lacks authority over all the forces involved. Voluntary cooperation may be a sound principle to follow in the conduct of a Rural Electrification District, but will it meet the harsh realities of war? Unity of effort flows from unity of command. The day to day employment of tactical air forces must fit in with the plans of the Army commander. Therefore, the authority to order, not request, air support must rest with the ground commander.

The coordination and supervision of tactical air operations—the assignment of air means—these should be the primary task of the tactical air force commander. The concept of independent air operations simply does not apply to tactical air support, anchored to surface operations. The application of doctrine designed for independent, strategic air operations to tactical air support has been a mistake. The placing of tactical air forces on a co-equal, coordinate status with the armies they support violates common sense. This command relationship reflects a wrong understanding of the relation of tactical air support of ground operations. It ignores the necessity for integrated control. It overlooks the need of direct command action to meet ever-changing tactical situations. It advocates split responsibility and divided authority with respect to land operations. Finally, it has transferred to an independent command authority over functions on which the Army must rely for its successful operation.

The tactical air forces in combat can still be placed under Army command, although they have become part of the independent U. S. Air Force. The U. S. Air Force is a going organization, which already possesses the machinery for creating effective tactical air forces. For the most part the procedures it has developed for its fire power on land targets are battle proven.

The problem is not to create a new machinery for providing tactical air support for the Army, but rather to correct the existing command relations of tactical air forces. Under existing doctrine, the theater commander may allocate tactical air forces to armies for close air support and "isolation" missions whenever the over-all air situation permits. Tactical air forces when placed in operational support of armies, must be welded into an integral part of the land-air team with the proven principle of command, not with the weak flux of "cooperation."

AUTHOR'S NOTE

Written before the assault on Korea subjected the organization of our air-ground team to a severe test, the arguments advanced in this article have become even more valid. No criticism of one service at the expense of the other is implied in this examination of our military organization. Certainly, no reflection is cast on the gallant soldiers and airmen who made the best of the faulty command structure available to them in Korea. But it remains that the close support of the Army by the Air Force could have been better.

TIMING THE TACTICAL TEAMWORK

Colonel Robert Whitney

A lucid and calm explanation of why air superiority and interdiction must come before tactical air power can give direct ground support

THE four-mile mushroom cloud over Hiroshima and Nagasaki, leaving death and devastation beneath, did more than mark a new weapon of war. It put such forcible accent on heavy bombardment aircraft that sound thought on tactical air—the lighter, faster, shorter-range weapons—and their uses was almost wholly obscured. The first atomic-bomb explosions opened new fields of thinking and fogged older fields.

Foggy thinking has lost innumerable battles; it has often changed the logical course of history. The last war might have been vastly different if Hitler and Goering had seen clearly what hindsight now makess plainly evident.

One error of the Nazi leaders came from a total lack of understanding of the proper use of air power. Possibly because of the Douhet influence, Goering and Hitler both had been impressed with their successes in Poland, the Low Countries, and France, and particularly with the Luftwaffe. They gave little or no thought to the weakness of the air effort that opposed them, for it had been speedily swept aside. They did not realize what an effective air opposition could mean. So Goering sent his bomber stream without escort against Britain —easy meat for interceptor Spitfires and night-fighter Mosquitoes. And Germany lost the Battle of Britain.

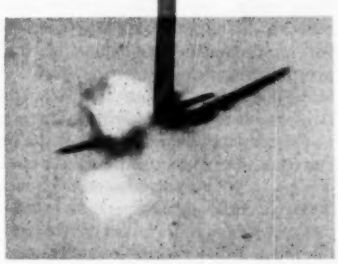
Goering had a fine example of the value of air superiority when the British put their umbrella of Spitfires over Dunkirk, but he failed to see what it meant. He built fighters, and he used them for the most part as interceptors in imitation of the British. But by that time we had offset them by building long-range fighters to escort our bombers. His handling of his fighters seemed to be without plan. He never used them in a continued effort toward air superiority; his thinking could not have been clear. We ourselves must think clearly and learn to use our weapons so as to get the results we must obtain.

Next time we fight we might face an enemy more acute than Goering, one who would turn on us with a proper appreciation of the tactics and techniques of air power.

Our thinking is apt to be influenced by the wish for a cheap and easy air victory. We think chiefly in terms of B-36s or their successors, flying at high speeds and altitudes over vast expanses by stellar navigation, to eliminate the war plants of an enemy with the giant blasts of atomic or superatomic bombs. It is all in terms of superlatives. The destruction Goering planned for Britain was on a smaller scale, but his concept was not greatly different from our own present ideas.

It is true that the bomber streams we sent over Japan and Germany wrought great damage. But over Japan we enjoyed sweeping air superiority; and over Germany we usually had enough fighter cover to give our bombers their chance.

IT would be far more than a calculated risk to wager everything on the outcome of a long-range strategic bombing campaign, no matter how great our esteem for the ability of its planners and no mat-



Air superiority comes first: A German Focke-Wulf 190 goes down in flames.

ter how well it may satisfy our desires for quick victory. Korea and other factors point to the probability of a ground campaign to earn victory in another war. We must plan so that in that campaign, if it comes, we can get the most out of what we have to work with.

We were told some time ago by Winston Churchill that our possession of the atomic bomb was all that kept the Soviet Union from our throats, and we have learned that the Soviet Union now has the secret of the bomb. It takes no deep reflection to see that some day they will have a stockpile of their own. And some day that stockpile could get big enough for Soviet planners to believe that its sudden use could cut us down to size, to the point where they could take our retaliatory blows and still be able to defeat what is left of us with what is left of them. When they reach that point in their belief, history will be at a crucial stage.

Our own decision to proceed with the hydrogen bomb has very little effect on the over-all situation. It might give us the delaying value of a weapons advantage for a while, if we got it first. The best we can hope is that our diplomats can make good use of such extra time. We cannot let starry-eyed dreams of overwhelming power muddy our thinking about air warfare.

NOW even if we feel that we dare not rely entirely on our heavy bombers and their cargoes, we certainly must not go to the other extreme of minimizing the impact they can have. Heavy bombers do pack a terrific punch, even using TNT and RDX bombs as we did on Germany and Japan, when they have freedom to get through to their target and put their bombs on it. At the World War II altitude of twenty thousand feet, they had fighter escort to give them that freedom over Germany. Our domination of the air over Japan permitted our bombers to hit Japan without fighter escort. For the fire-bombing of Tokyo, which killed more Japanese than either atomic bomb, and for the devastation of many other Japanese centers, the heavy bombers went in at around five thousand feet to step up their accuracy. They had absolute freedom to operate. And even Goering's bombers, although they lost in the end, did tremendous damage to London. So we must not minimize heavy bombers. We must hope that our own can do what we have been told they can do. But we cannot escape seeing that they could do it far better with favorable skies in which to work.

When we turn from heavy bombers to tactical aircraft, our thinking is again apt to fall into the pattern that was so attractive to Hitler and Goering, although with far less excuse. Our heavy-bombing ideas are based on distances that preclude fighter escort. Our tactical thinking has no such limitation.

There is no question but that fighters, fighter-bombers and attack bombers can effectively and efficiently pave the way for advancing ground forces. We did this ourselves in every theater, often with spectacular success. General Patton's armored thrust, when he called on Ninth Air Force to guard his flank, protect him overhead, and open up his opposition, was a history-making example. But its glamor should not make us forget that it had many of the characteristics of Hitler's thrusts across Poland and France.

To air thinkers, Patton's thrust was an outstanding example of the air superiority Ninth Air Force had achieved and held for the campaign. Without that superiority, the thrust might have been a short one, especially when he outran his supply, as he did more than once. Had the Germans had air superiority, they could have cut the Red Ball supply line, pinned Patton down, and destroyed his forces at will.

Just once toward the last did the Germans muster their air strength and take over temporary command of the air. This was in the initial stages of the Battle of the Ardennes, and their reward was immediate, since bad flying weather stopped our air resupply and for a few snowy days the battle ran much as they had planned it. But when the skies cleared, we threw in our full air weight and eased the pressure in short order. Early German superiority faded before our own fighter strength, and the dangerous German ground thrust became a final failure.

Our men who had to fight there in the snow without air cover will be the first to admit the relief they felt when they saw our planes again fill the air above them.

COMMAND of the air, then, is an absolute must. But the term can be misleading. It carries an implication of complete mastery, which is not at all the case. It is instead wholly a question of relative power in a given space at a given time. It depends on the ability to put superior fighting power in a spot at a given time. And it varies both with the amount of power and the size of the spot, as well as the duration of the time. It can thus vary a great deal; it can be fleeting and temporary and it can shift from side to side from time to time. It is the steady increase in ability to take command of the air and the knowledge of how to make the maximum use of it while we have it, that pays the final dividends.

Getting that command involves techniques not entirely unlike those of a ground commander, who by shrewd, successive shift and application of his forces inflicts successive minor losses of men and matériel on his opponent. He will finally reach a relative stage where the confident knowledge of his over-all superiority permits him to put on an all-out assault.

The ground force commander's need to shift his strength unobserved by and unknown to the enemy is a primary element in achieving tactical surprise. Enemy air observation and photography must be held to a minimum for him to do this successfully. Many a ground commander has heartily cursed a few friendly fighter planes that were apparently circling aimlessly high overhead and doing nothing to help him down below, when actually those planes were holding command of the air and preventing enemy knowledge of a troop movement of real importance.

Freedom of supply and resupply is even more important to ground forces than freedom from observation. Battles have often been won in spite of the

Interdiction is second: Thunderbombers knocked out this line of Nazi transport.

Ground support is third: Paratroopers on Corregidor search out the enemy.

enemy knowing full well the disposition of forces. But no army can hold out long without food and ammunition in constant stream. So enemy air strength must be cut down and kept from interrupting that vital stream. This is a defensive measure, of course, but it is only achieved by persistent air offensive. Here again the foot soldier has probably cursed the fighter squadron that passed high overhead and did not turn down to help him in his private battle, never realizing that the squadron he saw was on its way to meet, overcome, and turn back an enemy air attack that might well have destroyed his food and fighting power if it had got through.

AIR superiority is far more than a phrase meaning that our aircraft can go out and fly around as they wish to, with a pretty good chance of coming back safely. Offensively, it means that we can learn where the enemy is and what he is doing, smash up his logistics, and ultimately join our ground forces in direct attack upon him. It means that we can shift our forces without his knowledge, maintain our supply lines intact, and keep the enemy from making that last all-out joint attack. Acquiring the upper hand in the air is a top priority for every battle plan. The side that goes into battle without it will surely be defeated.

Now it is a basic principle of American battle planning that we must keep our killed and wounded to a minimum. This principle is not only Christian in its concept; it is also eminently practical against an enemy of substantially equivalent manpower. And it becomes of high importance when we face an enemy of *greater* manpower. For if we are to come out on top in a war with such an enemy, we have to keep our losses down while we inflict greater losses on him. That is nothing but plain common sense.

We have conserved manpower in our past wars by the expensive measure of making prodigal use of our superior resources and productive capacity. We may not always be able to draw on this vast economic strength, and certainly we must plan to conserve it as much as we can. Somewhere there is a bottom to our barrel. At the same time, if we are to conserve our manpower in the field, the only way that we can do it is by having more mechanical strength and fire power in the lines than the enemy has.

There are two ways—and only two ways—by which we can have more power in the field than an enemy. The first is by our historic and costly method of just plain outbuilding and outdelivering him. And we know that weapons that are built but never reach the field are useless. So the second way of having more power than the enemy is to make sure that what he builds doesn't reach him. The second way has the great advantage over the first of being a very sure way of conserving our resources, while attaining battlefield superiority.

DENIAL of enemy supply along the sea lanes is primarily the job of our submarines, which did it magnificently in the Pacific against Japan. Our air superiority over Japan was due in no small part to the Japanese shortage of aviation gasoline, imposed by those same submarines. In a land campaign, however, denial of supply is a major job of the tactical air arm. While the work of the heavy bombers is to see that enemy war production is held down to a minimum, it is the job of the tactical air people to see that as little as possible of whatever may be built ever reaches the front where it can be used. Their work is complementary in assuring our ground forces a strength superior to that of the enemy.

This tactical air job of denial of supply is the second phase of tactical air war, to be instituted as soon as possible and in the degree permissible by the status of the first phase, the gaining of air superiority. Denial, like command of the air, is a wholly relative term. It is not possible to close all railroads, highways, rivers, canals and paths so that nothing at all reaches the front. But with local air command at given spots for the time needed, it is possible to smash key points in a supply line so that little can pass them until they are repaired. Successive application of that technique soon means that the enemy force is getting less material than it is consuming and, in contrast, that our own force is growing in relative strength. It also means that that relative improvement has been achieved without the need for our building a great reserve stockpile, with its drain on our store of national resources.

There are two highly important points about this second phase of tactical air warfare that must not be overlooked. The most important is the one that should be most obvious; that where the opposing ground forces are well dug in and are of anything like equivalent strength, it is almost hopeless to attempt to force a breakthrough until the second attritional phase has had its time to take effect. The other point, which also should be obvious but which is far less well recognized, is that the operation of the second phase is a definite reinforcement of the first phase, the reaching of air superiority. Shutting down the enemy's ground supply lines also cuts down the supply he needs to maintain his forward fighter fields and forces him to shift them to the rear. As his fighters retire to more distant bases, they must relinquish more and more superiority to our own.

IN the past war we had some outstanding demonstrations of right and wrong timing in using the third phase of joint all-out attack, demonstrations that we made ourselves in the process of learning the art of modern war. We used the wrong timing first in our eagerness to get the job done, and only after it had failed did we turn to the correct method and meet success. The lessons to be learned make the story worth repeating.

Our ground forces in Italy had been halted for months at the Cassino Line and had been taking heavy losses in their efforts to pierce that historically ideal defense line. So we attempted the typically World War I technique of forcing the breakthrough by sheer weight of explosives, and threw our whole theater air power into a bombardment of the bastion that reduced it to rubble. The Germans came out of their caves and tunnels, set up their guns, and threw our attack back. Our third-phase tactical air attack had been timed too soon, the Germans had ample supplies to resist, and their line, for the time, was impregnable.

We learned from that experience and were able to prove that the way to neutralize the power of an enemy's spear is not by battering fruitlessly at its steel head, but simply by reaching around and sawing off its shaft. Although the Germans had ample fighter strength in the calf of the Italian boot, we sent our tactical air forces in carefully planned successive air attacks against railroad bridges and all transportation facilities that helped supply the German lines. Each attack was made strong enough to obtain the local and temporary superiority it needed over its specific target. Supply flow to the enemy lines soon fell to a trickle. Destruction of reserve supply dumps at the same time made the Germans still weaker. So when the next all-out air-ground attack was launched, only two months after the first failure, our breakthrough to liberate Rome wrote a new chapter in the history of war in Italy. Our advance was limited only by our own supply lines.

Historians may well describe the "iso-

lation" of this battle area as classical, in the speed and degree with which it was attained. The impact on the German air strength of supply denial was plain. They were forced to pull back their fighters to bases in the Po Valley, which correspondingly increased our air superiority. The success of our tactical phase two had its repercussion in the success of phase one, and facilitated phase three. Very few of the Luftwaffe attempted to impede our progress toward Rome.

Perhaps we are inclined to stubbornness and slow to learn our lessons, even in the hard school of war. At any rate, we went through almost the same cycle again in the very same theater. Again we tried wrong timing first before we used the proved procedure.

In the fall of 1944, our armies had pierced the Gothic Line and were battling desperately to force their way through the Northern Apennines, with the watchword "Bologna by Christmas." They made assault after assault, with our air arm lending every tactical aid. The well intrenched German troops, again well supplied, were resisting stubbornly, and our losses mounted until they grew too great for further justification. The attack was abandoned, and our air effort was released so that it might again turn to its work of slower, but proven, worth.

It stifled German supply coming through the Brenner Pass, and shut down supply from the northwest across the bridges of the Piave and Tagliamento. It made movement of anything anywhere across the Po Valley hazardous and laborious. It destroyed previously established valley dumps one after another. The German armies again felt the clutching hand of short supply, and when we attacked in the spring, they surrendered completely. They could not use rail lines that had been destroyed. They were unable to retreat in an orderly manner under the blows of our dominating aircraft. They had no chance of making their way to their Bavarian bastion, *Festung Europa*. Again, right timing of phase three, after phase two had had its deadly effect, brought full reward to our troops.

It is very easy to fall into the kind of thinking that misled Goering, and consider the third phase of tactical air warfare as being the sole reason why we have a tactical air force. This is the phase that is conducted in close company with an all-out troop effort on the ground. It is the phase where tank and infantry commanders can call up aircraft to blast obstacles out of their path and harass, disorganize, and destroy the foe, and help nail down a ground victory. It is impressive and spectacular, and when it is done *at the right time*, it does bring that ground victory. Selection of the right time is the key to success.

The right time is when air superiority has been reached to a degree where it can be held and used throughout the whole ground battle when air denial of supply has put the enemy where he has little to fall back on and when his transportation is so badly smashed he cannot hope to withdraw in orderly fashion.

Now, Goering apparently felt that because this third phase, the joint effort of the air-ground team, had been the essence of some of his spectacular victories, it was therefore the means of achieving victory. The costly lessons we learned at Cassino and in the Apennines show us the fallacy of such thinking. We cannot afford to think that all we need for a ground force victory is to give that force a team of tactical aircraft it can turn loose. We have to remember what the other fellow might be doing in the meantime.

If our enemy has air strength enough at his command, he can call them up and knock down our aircraft and take over superiority in the air himself (phase one), chop up and destroy our own supply lines (phase two), reshuffle his troops at his pleasure and give them supply under his own air cover (phase one), and finally pick his own time and place of battle and proceed to do to us in phase three exactly what we had thought we were going to do to him. It is a bit like grammar-school arithmetic, in that 1 precedes 2, and 2 precedes 3, and that the single unit "1" is always a necessary component of its multiples. Without 1, there could never be a 2 or 3. And without air superiority intelligently used, there can be no "isolation of the battle area" nor a hope of success in final joint assault.

GAINING air superiority and carrying out an interdiction program are matters for the tactical air commander alone, if only because they are so inseparably interlocked. He alone can know the operational status and capabilities of his aircraft, and the combat quality of his airmen. And only he can know how to get the results he wants. He must consider range, weather, enemy air opposition, bomb requirements among other things. And he must be a trained specialist in a highly technical field in order to get his desired end of enough air superiority over a given target for long enough to do its greatest damage. In this work he cannot have his targets selected for him arbitrarily by someone who cannot be expected to be as fully familiar with all the problems involved. A ground force commander should no more expect to direct air work of this nature than he would dream of directing a naval commander in the tactics to be used to bring up supply through submarine-infested waters.

The ground force commander will have high interest in the progress made in phases one and two and he will naturally base his own long-range plans on its success. He should keep his requests for battle-area sorties to a minimum during this period, so that the tactical air commander can prosecute his work to the maximum and with all possible speed. The degree of success achieved by the air commander in this work will be directly reflected in a similar degree of ultimate saving in American lives, matériel, and resources. It will be reflected in the speed and impact of the joint phase three—the pay-off action.

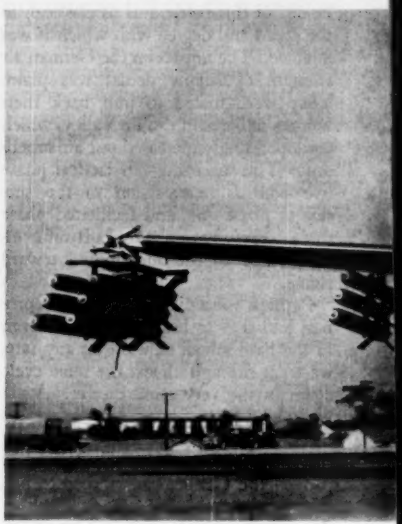
IN phase three, however, it is the ground commander who should call the turns. The distribution of the ground force and its own objectives are the dominating factors, and the air commander should throw his whole effort into helping that force reach them. The ground force commander alone will know just what he wants to do and what he wants the air force to do to help. And ground direction must be in control of the air-ground team, for it to roll with full effect.

We must plan for phase three wherever our air and ground forces may have to enter combat, and we should rehearse it so that each can play his part in it with the maximum effect. But we should not be so dazzled by the glare of this spectacular finale, that we again confuse our thinking. We must remember to play the hard, slow part that comes before this closing act and permits its success at last. We must remember the paramount importance of correct timing in this as in all things, and never try to start the wind-up phase of a modern campaign before its preparations are complete.

IN its broad aspects the action in Korea developed along the basic principles laid down in this article. It is too early to know all the details but phase one—air superiority—was attained very early. Phase two and three followed—as we shall learn in time.

THE CASE FOR THE JET

Captain John F. Loosbrock



The jet is here to stay until rockets and guided missiles take over so we had better get an understanding of what it can do

NO one, except a few die-hard disciples of Douhet, any longer questions the indispensability of effective tactical air support for ground operations to the successful prosecution of a modern war. In other words, those who admit the necessity for ground operations at all—and they are in a great majority these days—admit the need for close air support.

But the very admission of the Army's need for the finest kind of tactical air support lies at the heart of a controversy that has in no wise been settled on the proving ground of Korea. Basically, the quarrel is between the Air Force, which insists that technological progress has made the jet-propelled airplane indispensable for the job, and assorted critics who maintain we need a slower, heavier-armed, longer-range plane.

While I am not an apologist for the flyboys—either by tradition or belief—I do feel that they are right here and that we should face the facts. The conventional, propeller-driven airplane for anything more than long-range strategic bombing is as out of date as horse cavalry and we'd better learn to live with the jet plane, just as the Cavalry has taken to the armored tank.

As we know, the tactical job of the Air Force is to (1) gain air superiority; (2) isolate the battlefield (it's called "interdiction"); and (3) furnish close support—on-call missions against those targets that are an immediate source of irritation to the ground soldier.

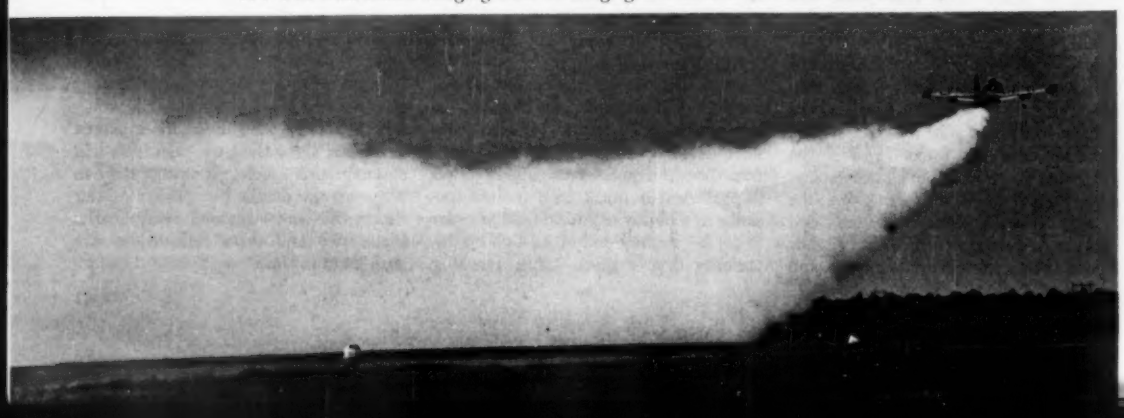
With these priorities the ground soldier has no quarrel, or shouldn't have. Psychologically, of course, he has a deep and abiding interest in the destruction of targets that stare him in the face. And he wonders whether the jet isn't a little too fast and too fancy to get that job done.

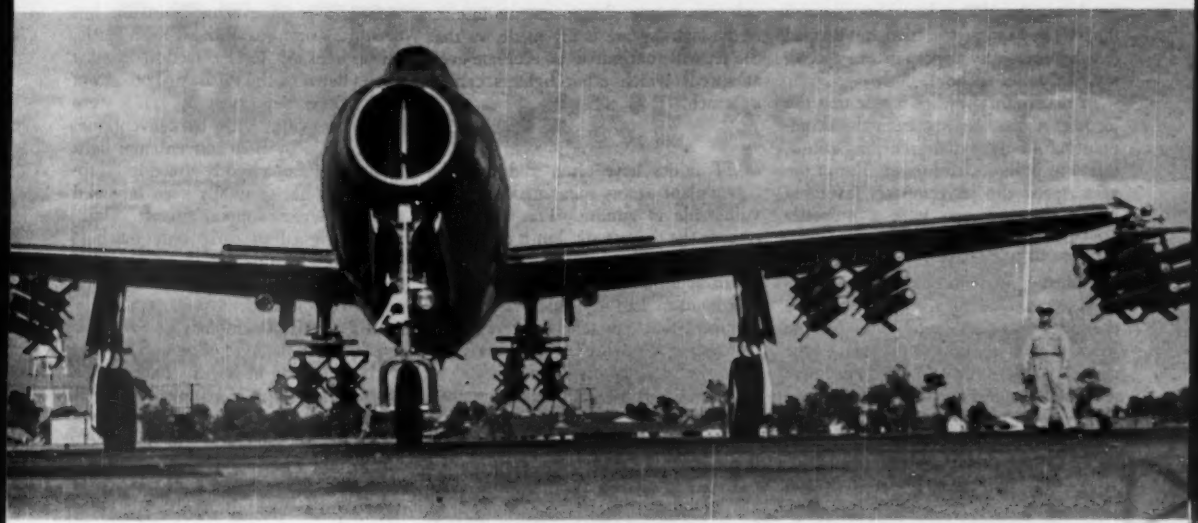
This brings us to that perplexingly pregnant question: why a jet?

The answer again begins with your basic requirements—what you want a given tool to do. In the case of a tactical airplane, there are three capabilities about which to worry: (1) the ability to stay alive in the air; (2) the ability to deliver effective fire, with bombs, bullets and rockets, upon ground targets; (3) an effective radius of action that al-

CAPTAIN JOHN F. LOOSBROCK, Infantry, Honorary Reserve, entered the Army through Selective Service in 1940 and was commissioned from the Infantry OCS in 1942. He served with the 16th Infantry, 1st Infantry Division, in North Africa and Sicily. An associate editor of the *Infantry Journal* for three years, he is now the Washington editor of *Popular Science Monthly*.

A F-84E with bombs hanging from its wings gets a RATO (rocket-assisted take-off).





The Republic F-84E, called the Thunderjet, is the Air Force's fighter bomber. Thirty-two 5-inch aircraft rockets hang from its wings. Its fixed armament consists of six caliber .50 machine guns.

lows you to get out, do the job, and get home.

THE last two present no specific problem. They can be, and have been, obtained in conventional, propeller-driven aircraft like the F-47 and F-51. But, says the Air Force, it takes a jet to fight a jet as much as it takes a tank to fight a tank, and no airplane can do a job for the infantry when it can't stay in the air against first-class jet opposition.

An analogy is to be found in the history of the Luftwaffe. Its lumbering Stukas did a magnificent job for the German infantry in the early days of World War II. But when the Allies got fighters into the air in quantity, the Stuka's days were numbered. It was too slow, too heavy, too specialized.

The problem almost resolves itself into a mathematical formula: the conventional fighter was to the Stuka as the jet is to the conventional fighter. The modern fighter-bomber is nothing more than an extension of a gun platform, and as such its success depends on its ability to get out to the target and, if possible, back. To select a more modern example, it is a matter for serious doubt whether our F-51s would have remained in Korea long if Red jets had been committed in opposition.

Proponents of the lower-slower ground-support plane are quick to point out that the high speed of a jet is a liability for close-in work. But they mistakenly assume that a plane must fly constantly at top speed. Jets are not con-

In Korea, an Air Force welder and armorer attach a rocket to a F-80 jet fighter.

fined to the 600-miles-an-hour speed range. They can be throttled and flapped down successfully to prop-driven speeds, say, 300 miles an hour.

At maximum speeds it is true that the jet is at a disadvantage from the standpoints of accuracy of fire, turning radius, safety in pullouts, and so on. But at the *same speed* the jet compares favorably in all these respects with a propeller model.

The relationship can be plotted graphically. If such considerations as accuracy, radius of turn, and rate of turn are plotted against speed—both for the jet and the conventional airplane—the curves will intersect at somewhere around 300 miles an hour. This would indicate that at this speed the two types are about identical, performancewise. And the jet can hit 600 miles an hour when it needs to. The conventional plane cannot.

FOLLOWING the same reasoning, it would seem illogical to say that the jet presents any problems in target identification that are nonexistent in a conventional craft.

Given the jet's ability to remain alive in the sky, the doughfoot would like answers to two pertinent questions. How much armament can it carry? And can it hit a target with it?

Early jets were sadly deficient in fire power, it's true. The first model of the F-80 was armed only with machine guns and it could carry them only around the block, in a manner of speaking. But it has been doing a pretty fair job in Korea from all reports, even though it's a high-altitude interceptor that is so obsolete it isn't being manufactured any more.

The F-84E, on the other hand, packs a bigger load of armament than any of its World War II predecessors. And it is the airplane the Air Force is pinning its tactical hopes upon.

The F-84E mounts six caliber .50 machine guns that fire at a cyclic rate of 1,200 rounds a minute as compared with the 700-800 of World War II aircraft guns. It can carry as many as 32 five-inch rockets, which equal in fire power a salvo from 8 four-gun batteries of 105mm howitzers. It can carry, in addition to 8 five-inch rockets, 2 eleven-inch Tiny Tims. Eleven inches is getting up in the naval gunfire class as respects size. And once it's dumped its load on a target, it's up in the 600-miles-an-hour class as a fighter.

The accuracy of a jet is unquestioned. Pilots say it is a much more stable gun platform than the prop-driven ship since it has no torque. Improvements in electronic sighting are being made, so that the jet will continue to be accurate even at speeds which other fighters cannot approach.

JET critics have often said that the power-plant arrangement makes the jet vulnerable to gunfire. This is true as regards the compressor, but it occupies a relatively small space that can be protected by armor. On the other hand, jet speeds have led to heavier spars and members that can take a lot of battle damage. And the fire hazard is cut down in two ways. First of all, jet fuel isn't as volatile as gasoline. And a new system, called "purging," pumps an inert gas into fuel tanks as they empty. Fire caused by battle damage is almost a thing of the past.

The biggest drawback to the jet is its fuel consumption. The make-up of the jet engine makes it operate most efficiently at high altitudes and at strafing heights it gulps fuel voraciously. Better engines, improved fuels, and tip tanks are easing the problem in a limited degree; but it's still a big headache.

Another jet handicap is the necessity for long rolls, both on landing and take-off. This presents a serious drawback when trying to operate from hastily built tactical strips. On Navy carriers, the problem has been solved with catapults and arresting gear. Thought is being given to some sort of modification of these that would adapt itself to land-based operations. It has been reported that British experiments in this field include landing without wheels on sponge-rubber pads. And in wartime, when cost is no object, RATO (rocket-assisted take-off) can be used freely.

THIS airfield problem has been pointed up in Korea where initial ground support came from F-80s, *obsolete high altitude interceptors*, based in Japan. This, one news writer wrote, was like "expecting Jackie Robinson to cover second base from the Brooklyn dugout." It wasn't until September that the one battalion of air engineers in Korea could get the equipment and pierced steel planking necessary to open up a strip. This factor may be a valid objection to use of the F-84E and its improved successor the F-84F. Both are heavy planes and may require longer and stronger runways than are practical in forward areas. But their comparatively long range may help to make up this liability.

The F-80, which few, if any, had foreseen as a possible tactical aircraft, has been the workhorse of the Korean battle. Of a total of 16,689 tactical combat sorties flown by the Fifth Air Force from June 25 to September 5, 7,573 were flown by F-80s, 7,108 by conventional F-51s, 1,726 by B-26 conventional light bombers. From a lightly armed interceptor the 80 has gradually been modified into a fine close-support aircraft. Originally designed to carry only machine guns and 5-inch rockets, it now is being made over to handle napalm and high explosive bombs.

In general, the infantry seems to be satisfied with the kind of ground support it's been getting in Korea. There was a shortage, perhaps a complete lack, of artillery on a corps level. Air power was called in as a substitute and responded, far beyond what it had done in World War II. It is worth noting that in World War II in France, the Ninth Air Force of the Tactical Air Command flew only thirty-five per cent of its sorties in direct support of infantry, inside the bomb line. In Korea, from fifty to ninety per cent of the Fifth Air Force's daily sorties have been directed at enemy targets inside the bomb line.

One airplane, which the Army rates highly in the ground support field but which has not evoked too much enthusiasm from the Air Force which controls the purse strings, is the Glenn L. Martin Company's three-jet XB-51. This is a light bomber combining the carrying capacity of the dependable B-26 with jet speed. But only one prototype model is in existence and current procurement schedules do not indicate that more are to be built.

In the fighter-bomber field, the Army leans toward another experimental model over which Air Force experts fail to rave. This is the McDonnell XG-88 Voodoo, a twin-jet fighter. Its extreme-long-range characteristics and gun platform capabilities appeal to Army planners but the AF is lukewarm. It still maintains the F-84F is the answer and perhaps it is. In any event the Air Force is buying the 84F in quantities and it will be *the* tactical airplane for some time.

In any case, the ground support picture would seem to be brightening. Korea proved its necessity.

What all this adds up to, in my estimation, is that we must use the jet, whether we like it or not. It isn't a panacea for everything that's wrong with ground support. But it's here to stay for a while at least, until the rockets and guided missiles take over. And we'd better understand its advantages and limitations and learn to live with them.

GREATER FIRE POWER FOR THE AIRBORNE ASSAULT

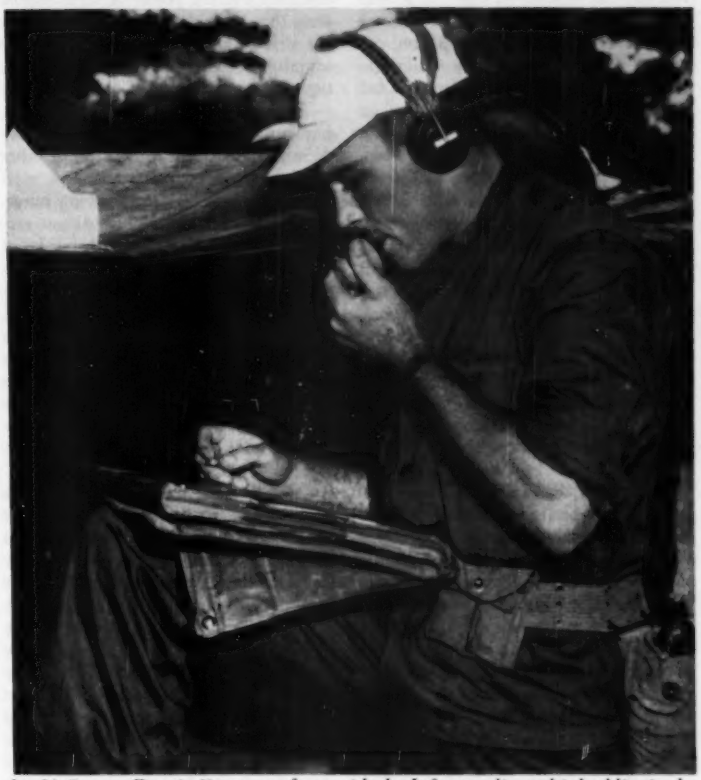
Captain Gene H. Walters

The value of tactical air support to an airborne operation cannot be overemphasized, but—say it softly, there are difficulties. Here is how the Air Force and the Army try to put it together

THE ability of our armed forces to exploit aerial vehicles for tactical purposes in war has greatly influenced and advanced airborne warfare and has materially affected the tactical concepts of our ground commanders. Advocates of the airborne technique have worked energetically to create an airborne force that possesses a high degree of strategic mobility. The airplane has made it possible for Army units to deliver shock action and effective ground attacks over great distances in a minimum amount of time. It is now possible to establish and sustain an airhead of field army size.

Through effective air-ground coordination and cooperation, an airhead operation can obtain much greater fire

CAPTAIN GENE H. WALTERS, Infantry, is a former member of the 82d Airborne Division. He is now on duty at The Infantry School.



An Air Force officer in Korea, up front with the Infantry, directs his buddies in the air above to a target that's holding up the Doughs.

Two F-80 jet fighters flash down a Japanese runway en route to Korea on a strafing mission against ground targets. They are carrying rockets under their wings.

power than was exhibited at any time during World War II. The potential value of close air support in an airborne operation cannot be overemphasized.

We have properly come to think of tactical air as used in three tasks, in this order of priority: (1) the gaining and maintaining of air superiority; (2) the interdiction program, more commonly referred to as isolation of the battlefield; and (3) the conduct of close air-ground cooperation in the battle zone. These three tasks of offensive air action can seldom be segregated into watertight compartments. There is no accurate formula for determining the amount of effort that must be expended on Task 1, Task 2 or Task 3. Only after many conflicting considerations are reconciled can the amount of air effort to be used on each of the three tasks be properly allocated. Although changes may occur in the actual amount of effort expended on each the priority assigned to the three tasks of an operation will not change.

The gaining of air superiority is unquestionably the first requirement of any major land operation. Particularly is this true in the case of an airborne operation. In any conflict in the foreseeable future, the first objective must be to win the air war—gain and maintain air superiority.

Air superiority is a necessary and fundamental prerequisite for successful airborne operations; it must, at least, be adequate in the local area so as to prevent effective enemy counteraction and to provide the reasonably safe flight of troop-carrier aircraft to the airhead area and to support the airborne task force during the ground operation.

GROUND combat units rarely see any of the actual missions and air strikes which isolate the battle area and which are so important a part of the air force contribution to joint victory. Even though we in the ground forces see none of the Task 1 and Task 2 air strikes, we shouldn't feel that we are without air support. In the accomplishment of the second task—interdiction—both the theater and battlefield are "walled-off," so that we in the ground forces are faced with a fixed opposition. It keeps enemy aircraft out of our hair and permits us freedom of movement that the enemy does not have.

One of the greatest assets of our tactical air arm is the flexibility with which it can concentrate and mass its latent striking force upon any selected target area at an almost unlimited range. Such an attack can be switched from one target to another and is capable of delivering quickly a devastating volume of crushing fire.

In operations involving the third task of offensive air action where ground targets are attacked in support of airborne troops, we must accept the view that the airplane, as a source of fire power, is a highly versatile weapon. The basic consideration in air-ground planning is to so integrate the fire power of all available arms that the airborne force may secure the airhead area and rapidly exploit the initial gains with a minimum of casualties.

The airplane, as a source of fire power, has certain capabilities and also very definite limitations, as does every other existing weapon. Its prime and most favorable characteristics are long range, heavy projectile and ability to mass rapidly. We must take these capabilities of the weapon into account when formulating our fire plans. We should not select fire missions which it can't perform. We must learn to evaluate tactical air power's capabilities and understand its limitations so that in airborne operations of the future we may marshal all possible fire power in our behalf.

ADEQUATE close air support can be provided an airborne force in the establishment of an airhead involving a deep penetration even though radar control facilities are not available at the beginning. One of the basic prerequisites of an airborne operation is the enjoyment of a satisfactory degree of air superiority, particularly so within the proximity of the airhead area and the corridors leading into it. This, together with fighter escort, permits the slow-moving troop-carrier serials to enter the airhead area and depart with a minimum degree of enemy air interception. These same corridors, at higher altitude, can be utilized for entry into the airhead of flights of supporting fighter-type aircraft. These flights, allocated to support of the airborne force, can be adequately controlled for close support missions from within the airhead area through the medium of the fire support coordination center (FSCC). When necessary, intercept missions or cover fighters can be used to protect these close support aircraft. Such flights maintain "cover over the area" to protect the close support sorties from interference by enemy fighters and to prevent any attempt by hostile air striking forces from attacking our ground forces. This cover resolves itself into sustained patrols, split into high and low cover.

Although the satisfactory radar control of aircraft as executed by the tactical air direction centers (TADCs) and tactical air direction posts (TADPs) is highly desirable in an airhead situation, it is not an absolute requirement during the earliest hours of airhead establishment. In the event that close tactical air support missions cannot be adequately executed by the TADC or TADP, the director of combat operations, at the joint operation center (JOC), may designate the air liaison officer (ALO) of the division fire support control center to perform this function until radar installations can be established within the airhead area. The ALO at the division FSCC may assign flights to specific tactical air control parties (TACP) or to forward air controllers (FACs) for direction onto targets. The ALO at division FSCC coordinates the activities and assignment of TACPs and FACs and monitors the coordination of ground fire and air attacks to insure maximum use of the air effort.

A tactical air control party (TACP) is the most forward element of control in the tactical air control system. Its mission is to direct aircraft to a ground target, located close to the front lines, as may be designated by the supported unit. This party is led by a forward air controller (FAC). The party has a VHF radio for ground-to-air communications and an HF radio for point-to-point communications with the nearest tactical air direction center or tactical air control center.

During World War II the TACP, with its heavy communication facilities, usually arrived in the airhead area by glider following the parachute assault force. The disadvantages of this are obvious. Close support within the airhead area could not begin until after arrival of the TACP, whether it was an hour or even a day. Other than preplanned interdiction and diversionary missions to minimize initial enemy resistance in the airhead area, there was no adequate method for effectively using tactical air power. They are furnished with a VHF radio for ground-to-air communications and an HF radio for point-to-point communications with the nearest TADC or TACC. In the past, there have been two schools of thought about the need of FACs in the initial phase of an airborne operation.

Those who oppose the initial use of FACs hold that gliders can trail the parachute elements by a matter of minutes, or might even land in an adjacent area simultaneously with the landing of the parachutists.

Further, those who oppose initial use

of FACs say that close air support should not be permitted to interfere with the first two missions: gaining of air superiority, and interdiction. The ideal situation would be one in which the air force, after having attained air superiority, continues with the interdiction mission before the airborne operation begins. Then, when the airborne operation commences and the TACPs have arrived, close air support can be given. If a thorough and intense interdiction campaign has been waged it is possible that little effort would be required in the way of close-support operations during the initial phase of the airborne assault.

Those who oppose initial commitment of FAC also hold the joint air-support plan should contain adequate plans for conduct of preplanned tactical air support missions, photo and visual reconnaissance, diversionary raids, and bombardment. These missions would include perimeter protection of drop and landing zones, bombing and strafing of likely targets at or near the combat area, attacks on enemy artillery or armored reserves which may jeopardize the airborne mission, bombing of enemy rear installations which directly affect his ability to threaten the operation, and by attacking lucrative targets of opportunity. Such preplanned missions as these might be adequate and the TACPs could come in behind the assault echelons.

It has also been argued that it is a waste of air power to have fighter aircraft over an area awaiting call to strike a target. A considerable number of planes are needed to keep even a small number in the air and alert for missions which may or may not come.

There is also the danger that an air mission might be directed against our own forces because of the initially scattered pattern of a parachute assault. Until the parachutists are grouped and in known positions, air strikes in the area might well be risky. Preplanned missions might be successfully employed beyond the initial bomb line or second airhead phase line. The time element involved in accomplishing reorganization would, in certain instances, allow sufficient time in which to land gliders bearing TACPs.

HOWEVER, those who advocate continuous and effective employment of the air effort argue that it would be advantageous to drop TACPs or FACs with the initial parachute assault forces. Airborne forces are sensitive to the demands of fast-changing situations on the battlefield. Through the presence of FACs, the airborne force would be able to maintain communication with the supporting tactical aircraft for the purpose of rapidly exchanging current battle information and intelligence. Further, in the event some target appeared which threatened the operational plan of the airborne force, friendly supporting aircraft orbiting over the airhead area on an air alert status could be brought into action within a very few minutes. If the supporting aircraft should strike within friendly troop boundaries, the FAC could immediately communicate with the pilot and stop him.

Although the arguments of the opponents may appear reasonably sound, the over-all advantages gained by having TACPs or FACs accompany the initial parachute assault force far outweigh all other opposing factors. The effectiveness of close air support demands that the shock and destructive power of the supporting aircraft be delivered against those hostile targets which are immediately opposed to the front-line troops. Such air missions in an airhead situation are so intimately related with the front-line operations that they require a detailed integration of each air mission with the fire and movement of the airborne forces. Thus, the presence of a TACP or FAC in the earliest phase of airhead establishment is essential.

Obviously control of supporting air attacks in the airhead area must be exercised by the forces in the airhead. This requires direct communication between the tactical air control party within the airhead and the supporting aircraft in the air.

Recently two methods of using FACs in the directing and control of tactical air support operations during the initial phase of an airborne operation have been proposed.

One is that airborne soldiers should be trained in the techniques of controlling tactical aircraft in the conduct of close air-support missions. The men designated to perform the duties of a FAC during the early hours of airhead establishment would most logically be artillery forward observers or perhaps pathfinder officers of the airborne division. They would jump with portable VHF radios. Upon arrival of the glider serial, these men would be relieved by more highly skilled air force TACPs. The heavy jeep-mounted VRC-1 communication equipment would, of course, accompany the air force TACPs in the glider follow-up serials.

The other method is for trained air force FACs as parachutists to drop with the assault forces. They would act as FAC or TACP until such time as heavier jeep-mounted communications equipment came into the airhead.

Although the training and use of airborne soldiers as FACs is entirely feasible, the use of air force FACs is generally more acceptable. This system was attempted on somewhat of an experimental basis during Exercise Tarheel, in the spring of 1949. Rated Air Force pilots, having qualified as parachutists, jumped by parachute with an airborne RCT. Within approximately seven minutes after having landed, a FAC had established communications with the tactical air coordinator (airborne) and secured aircraft for an immediate ground attack mission. Further, even better results were derived in Exercise Swarmer in the spring of 1950.

The tactical air coordinator is an air force officer who, from an aircraft orbiting over the airhead area, coordinates the assignment and action of combat aircraft engaged in close support operations of the airborne force. He has direct communication to the FACs located with the supported airborne force; direct communication to supporting aircraft; and communication to the TADC or TACC in the base area. Supporting aircraft report to the tactical air coordinator and are then assigned in accordance with priority of missions to the FAC who controls the attack.

AT the airborne infantry battalion level, the following air-ground operational system has been used and is acceptable considering present-day procedures and techniques:

Several weeks before the airborne assault is launched, a forward air controller is attached to the airborne battalion with which he will be operating. This gives him time to gain some knowledge of ground operations and organization and become familiar with his ground associates. The primary mission of the forward air controller is to control aircraft to a target on air-ground cooperation sorties conducted close to the front lines. He must be capable of jumping by parachute with the airborne assault elements of the battalion. A portable VHF radio (of the AN/TRC type) complete with battery must be carried by the FAC for ground-to-air communication. An additional radio and spare batteries should be carried in the assault by an enlisted assistant who accompanies the FAC.

In an airborne operation where the initial situation is normally so fluid and critical as to warrant continuous expenditure of air effort in support of the air-

THE ARMY AIRBORNE CENTER

Lieutenant Thomas B. Bruff

IF you thought something new had been added when the Army Airborne Center was established at Fort Bragg last April, it is because you have forgotten or never knew about the wartime Airborne Command, established in 1942 by Army Ground Forces. The wartime Airborne Command organized and trained airborne units, coordinated the use of transport aircraft assigned to airborne units, and set up airborne operating procedures.

The current Airborne Center is an agency of the Chief of Army Field Forces. Its establishment was a direct result of a recommendation of the Army Airborne Panel in January 1950. This panel busied itself for three months studying airborne operations and developed a course of action which the Army could pursue in developing a modern airborne fighting force.

As the name of the installation and its title imply, the director has no command functions. He directs the activity of the Center and assists the Chief of Army Field Forces in discharging his responsibilities in airborne matters. His relationship to the Chief of Army Field Forces is the same as other heads of that office. Close liaison is maintained with the Air Force and the Navy, especially in coordinating and developing joint airborne doctrines, tactics, techniques and procedures.

THE three departments echeloned under the director are the tools with which he accomplishes the Center's mission.

The Doctrines Department reviews, develops and recommends revision of joint airborne doctrines, techniques and tactics. It studies and makes recommendations on the Army's requirements for transport aircraft.

The Training Department coordinates joint training and coordinates specialist (individual) training. It reviews and recommends training aids and literature and plans joint airborne maneuvers and exercises.

The Evaluation Department arranges for service tests of specialized weapons and equipment primarily intended for airborne operations common to two or more services. It prepares evaluation reports and submits recommendations to the Chief of Army Field Forces.

At the moment the Center is involved in, or has completed, a hundred-odd projects. All these projects and future ones include every phase of airborne operation.

borne force, aircraft will be allocated to the airborne force on an air alert status. Missions of this type provide rapid air action by small numbers of aircraft on targets of opportunity discovered by the ground unit. Flights are dispatched at regular intervals to a designated orbit point in the vicinity of the airhead area. There they make radio contact with the FAC. Requests for air support are made by the ground forces to the FAC. The FAC passes on the request to the tactical air coordinator or the flight leader and directs the flight on the target.

In air-briefing of pilots by FACs, information is given concerning their relative position to the target, map-coordinate designations, recognizable terrain features, or unusual activities in the target area.

IN his work the FAC usually accompanies the artillery liaison officer at the airborne infantry battalion. This is not a hard-and-fast rule, however, as it may occasionally be necessary for him to be up forward with one of the artillery forward observers, in order to observe the target being attacked and adequately direct the air strike. The observation and communication facilities of the artillery are used by the FAC when he is at a forward observation post. The observation and communication facilities of the artillery are especially adapted to the task of coordinating and assisting in the control of close air-support missions. The direct-support artillery battalion has many observers and liaison officers well distributed over the front. These observers can furnish the description and location of any target in their zone of responsibility. When the FAC parachutes to earth in an operation his first job is to set up his portable VHF radio and establish communications with the tactical air coordinator. When the infantry battalion commander asks for a close air-support attack, the FAC communicates the requirements to the airborne tactical air coordinator who puts the request into operation. If one of the division assistant G-3 air officers flies with the tactical air coordinator he can help him locate and identify the airborne units and report enemy targets and troop dispositions. The tactical air coordinator should have rockets (smoke or HE) and machine-gun tracer ammunition in his plane to use in designating targets to the attacking aircraft. If necessary, he can designate the target to the attacking aircraft by making a dummy run over it. This technique is particularly applicable to targets which cannot be seen from the front line, area targets to be attacked with napalm, to coordinate air strikes, and to designate targets which are under cover.

After the direct-support artillery battalion FSCC has become operational, requests for air strikes are no longer sent directly to the FAC of the airborne infantry battalion. Targets requiring fire support not available within the organic airborne infantry battalion are then sent through normal artillery communication channels to the direct-support artillery FSCC. The request for fire support will be processed and evaluated in the normal manner. If the air strike is ordered and a flight is available, the aircraft is vectored by the TACP at the direct-support artillery battalion FSCC to the FAC with the requesting unit for control. To do his job efficiently, the FAC must work with and receive help or assistance from the artillery liaison officer at the airborne infantry battalion. The battalion artillery liaison officer can keep the FAC informed as to target data as he has many sources for obtaining such information. This type of close air-ground cooperation requires a great deal of coordination with the artillery.

UNTIL an accepted joint procedure, for the conduct of close air support during the initial phases of airhead establishment, has been subjected to exhaustive and extensive field tests, the soundness of procedures discussed above is a matter of theoretical, yet reasoned conjecture. Concentration on a comprehensive and progressive training program is necessary. It should be designed to acquaint both air and ground commanders and their staffs with the current doctrines and procedures to be followed in the conduct of close air-ground support. An important feature of such a program might be the inclusion of a comprehensive test or examination of proficiency in air-ground cooperation. In fact, these air-ground tests should occupy an important place among the standardized tests covering essentials of training which appropriate air units, as well as ground units, must pass to be certified for combat readiness.

A vital step is that of an army-tactical air force joint operations center (JOC) which is located at Pope Air Force Base, North Carolina. Another step in the right direction, and of even greater importance, is that of a contemplated organization of a joint air-ground operations center.

The development of an adequate air-ground training program is a joint responsibility of the Army and the Air Force.

National Defense: *Three Big Jobs*

With the Korean campaign moving towards a much faster conclusion than had been thought possible early in September, the long-range defense needs of the nation took first priority. There was some danger that the successful "end of the war" in Korea would result in the usual dropping of the nation's guard. But a new team in the top offices of the Pentagon, an acute nation-wide understanding of the nature of the communist menace to peace, and definite commitments to our friends in western Europe —all these made it almost impossible that the normal American's inclination to be haphazardly concerned about his nation's military posture would be asserted so strongly as to make the new rearmanent program a victim of stillbirth.

In "Military Policy: 1950" in this magazine last month, General Bradley wrote: "The time for *talk* has now gone by. In this very fall of 1950 we must act."

Even though the shooting war was in the Far East, the defense impetus is primarily directed at western Europe. We are going to bolster our forces in Europe and we are even now giving concrete aid to the rearming efforts of the North Atlantic Treaty nations.

The North Atlantic Council, meeting in New York, announced that it was "agreed upon the establishment at the earliest possible date of an integrated force under centralized command." The Council then turned over to the Defense Committee the job of working out the organization of the integrated force and to recommend ways to create it.

The Korean conflict had left little military power in the United States itself. There hadn't been much before, for that matter. But most of the Army's organized combat units were in Korea and the same was true of the Marine Corps'. A good share of the fleet-in-being was in Pacific waters. The Air Force wasn't so deeply committed in Korea but some of its strategic bomber units were there.

The immediate three big jobs in the long-range task of making the nation militarily strong were to get men into the services, train them to fighting effectiveness, and produce the weapons and equipment that they would need.

Army: *Inspectors for the Combat Arms*

When the chiefs of combat arms were abolished in March 1942 it was remarked by some that the Army had now been streamlined. But despite General McNair's efforts to keep his AGF headquarters trimmed to workable proportions, AGF sometimes moved more like a 100-ton tank than a mobile jeep. For training an Army in which doctrines and weapons were pretty well standardized, and whose prior training had emphasized the tactics and techniques of the separate arms, AGF was an excellent organization. But in the training of the 1950 Army, emphasis on branch training needed direction; training in the combined arms would be of little avail if there wasn't a high standard of proficiency in the units of the several arms.

To insure this standard of proficiency, General Clark established Inspectors for Infantry, Artillery and Armor in his Field Forces headquarters. Each inspector is a general officer and each reports directly to the Commanding General.

The primary job of the inspectors is to insure that units of their different combat arms in the field are moving toward a high degree of effectiveness in their training.

They will also push the development of weapons of the arms.

For his inspectors General Clark named Major General John W. O'Daniel as Inspector for Infantry, Major General George D. Shea as Inspector for Artillery, and Brigadier General Riley F. Ennis as Inspector for Armor.

General O'Daniel, the first postwar commandant of The Infantry School, has recently been Military Attaché to the Soviet Union. During World War II he commanded the 3d Infantry Division.

General Shea commanded the Artillery of XIX Corps in Europe during World War II. General Ennis has served with armored units for many years and during World War II commanded a combat command of the 12th Armored Division in Europe.

Policies and Developments

Draftees. Between 370,000 and 500,000 draftees may be called into service by July 1, 1951, Maj. Gen. Lewis B. Hershey, Selective Service Director, revealed in testimony before the Senate Appropriations Committee.

Retirement? Enlisted men retired on 20 but less than 30 years' service are being held on duty an extra 21 months. Since August, each enlisted person applying for retirement and transfer to ERC has been informed that, if retired, he will be recalled the following day for 21 months' service.

Training Centers. Training division designations have been given to the four posts reopened recently as training centers, bringing to eight the total number of posts with training divisions.

Units assigned to each of the four reactivated posts are: 101st Airborne Division, Camp Breckinridge, Ky.; 5th Armored Division, Camp Chaffee, Ark.; 8th Infantry Division, Fort Jackson, S. C.; 6th Armored Division, Fort Leonard Wood, Mo. The four divisions already assigned to such centers are 9th Infantry Division, Fort Dix, N. J.; 3d Armored Division, Fort Knox, Ky.; 6th Infantry Division, Fort Ord, Calif.; 10th Infantry Division, Fort Riley, Kans.

Eleventh Division. The 4th Infantry Division was activated at Fort Benning, Ga., bringing to eleven the number of Regular Army divisions in being. (Four National Guard divisions have been federalized and are in training.) The 4th (in name only) had been one of the Army's training divisions and stationed at Fort Ord, Calif. The 6th Infantry Division was named as the replacement for the 4th as a training division at Ord.

Industrial College. To facilitate mobilization of the national economy, the Industrial College is making available to carefully selected Regular and Reserve officers, and civilian leaders, the first correspondence course offered by a top-level service college. The Army's quota is 500. Completion of the course will normally require three years.

School Program for Guardsmen. All Army school courses have been available to National Guard officers and men, but participation was curtailed early in June because of budgetary limitations. Dur-

ing fiscal 1951, under an expanded school program, special training at service schools will be given an increasing number of Guardsmen.

Simplified ER Forms. Revision of DA AGO Form 67-2 (officer's efficiency report) to simplify the procedure of preparing and submitting periodical ERs was announced. The new report consists of two pages instead of the previous four. It can be scored by hand rather than the former method of being run through electrical pencil-mark reading machines. Frequency of submitting reports unchanged.

Research Jobs. Company-grade officers in research and development training units of the ORC will not be recalled to AD as part of the over-all recall program, but will be ordered to duty by the Department of the Army and placed in specialized R&D posts. Thus reservists with technical qualifications will be assigned to research positions where their skills can best be utilized.

Drill Pay. With funds now available to the ORC, fully organized units are authorized to pay 10,500 officers and 61,000 enlisted persons, an aggregate increase of 47,500 in pay status. Units are allowed 48 drill pays a year. There will be a proportionate decrease in the number of less than fully organized units drawing 24 pays a year. Many of these will advance to fully organized status under the new pay authorizations.

INFANTRY

Progress in Field Manuals

The following manuscripts of field manuals have been prepared at The Infantry School and sent to Army Field Forces for approval:

FM 7-24 (*Communication in Infantry and Airborne Division*)

FM 21-5 (*Military Training*)

FM 23-85 (*60mm Mortar*)

FM 26-5 (*Interior Guard Duty*)

FM 7-17 (*Armored Infantry Company and Battalion*)

FM 7-10 (*Rifle Company, Infantry Regiment*) Changes only.

FM 7-20 (*Infantry Battalion*) Changes only.

ARTILLERY

Air Transportability

The increasing emphasis on the air movement of ground combat troops is reflected in current training at The Artillery School. During August 296 officers and men had indoctrination flights as a regular part of the air-transportability classes of the Department of Airborne and Special Operations.

In addition, the associate basic officers' classes and certain enlisted specialists are taught to load and lash artillery equipment. This training is given a realistic touch when students take short flights in the planes which they have loaded to see the effects of air maneuvers on lashed loads.

Plans are also nearing completion for the construction of a full-scale mock-up of the C-124 so that students can be taught to load and lash cargoes up to 25 tons. These loads include artillery equipment up to the 8-inch howitzer and all trucks issued to artillery units.

Unification

Operations in Korea have pointed up again the value of coordinated naval and artillery gunfire. The previous establishment of the fire support control center was the first step in making practicable the massing of both naval and artillery fires on the same target. The latest development in this field has been the adoption by the Navy of the basic principles of the Artillery's target-grid method of conducting observed fires.

These methods have been included in the Navy's standing spotting and general bombardment procedures. The problems of applying the target-grid methods to naval gunfire were outlined in detail in the March-April 1949 issue of the *Field Artillery Journal*.

The establishment of a Department of Training Publications at The Artillery School at Fort Sill combined the activities of the former departments of Training Literature and Visual Aids with the Department of Extension Courses. Supervision of the Field Printing Plant at Sill will also come under this new department.

The recent redesignation of Field Artillery and Coast Artillery into a single Artillery branch has given rise to much speculation as to the branch insignia that will be adopted. The Heraldic Division of the Office of TQMG has the matter under study but as this issue went to press, no decision had been announced. Incidentally, a Department of the Army circular has been distributed announcing the redesignation and instructing all artillery officers to designate their branch as Artillery.

Radars

The ANAMPQ-10, mortar-locating radar set, which will be standard issue to 105mm howitzer battalions in infantry, armored and airborne divisions, is being produced. Two sets will also be issued to each lettered battery of the artillery observation battalion.

TAS is all set to go to work on the instructions for use of the new RAWIN GMD-1 radar set which is an automatic tracking and printing radio direction finder used by both AA and FA units to obtain ballistic meteorological data. Basis for T/O&E issue is being considered. Meanwhile production of the sets has started.

New training aids

For instruction in survey:

¶ A three-point resection board that portrays the various situations which occur in this type of resection, with red lights for stations and white rays of light for angles and distances.

¶ A map projection trainer obtained from the Air Force which shows results of projecting spherical surface on various plane surfaces.

¶ A star-recognition trainer which projects on a hemispherical canopy the image of stars in their relative locations used to determine azimuth by astronomical observations.

¶ To demonstrate battalion survey, a board which, by means of manually operated colored strings, shows the varying amounts of survey required by grid sheet, battle map, or photomap firing charts. It also emphasizes the difference in survey requirements for rapid or deliberate occupation of position.

In training charts:

¶ Developed by the Sound-and-Flash Section of the Observation Department at Sill, a handy means of handling training charts under adverse conditions. By joining charts in sequence strips and winding on a roller, charts can be brought into position smoothly one after another. A second roller, seven feet in the air, powered by a sash weight assembly, rewinds used charts. Further refinement is a foot-treadle brake mechanism to control operation.

New training films

On survey:

¶ Describing the determination of azimuth by astronomical means using both altitude and hour-angle methods (Project 102,000).

¶ Under preparation, a film illustrating firing battalion survey.

On fire direction:

¶ Under preparation, a three-part film covering precision-fire, area-fire, and observed-fire charts.

On gunnery:

¶ Under preparation, a two-part conduct and adjustment of fires covering both basic and advanced procedures. Principles covered in film will apply equally to mortar fire, and outline for film has been worked by the combined efforts of The Infantry and Artillery Schools.

PROBABILITY: KILL!
Man's age-old search for a truly dominant weapon, able to prevent wars or win them, is nearing culmination in the form of guided missiles. This nation's future existence well may depend on America being first to develop, produce and operate guided missiles with highest hit probability for anti-aircraft defense and greatest damage potential for striking back against an aggressor.
The Convair Missile Team, with impressive experience in design, production and flight-testing guided missile warbirds for the Navy and Air Force, is dedicated to perfection of the ultimate in automatic weapons.
Consolidated Vultee's experience is helping America develop guided missiles of pinpoint accuracy for every conceivable mission . . . missiles with eyes to seek, brains to guide and muscles to destroy . . . missiles launched from land, sea or air platform . . . missiles to defend and missiles to strike back . . . missiles to prevent wars —or win them!
CONSOLIDATED VULTEE AIRCRAFT CORPORATION
SAN DIEGO, CALIFORNIA FORT WORTH, TEXAS
IN THE AIR — IT'S
CONVAIR

In motor maintenance:

¶ The Artillery School has resumed instruction in automotive maintenance and repair after a long period when this instruction was handled by Ordnance Corps schools. The new courses are for automotive maintenance and repair specialists, motor officers and motor sergeants. Starting in October 1950, new courses are to begin each month. The course for motor sergeants runs for eight weeks, the other two for fifteen weeks. The concentrated course for motor sergeants is predicated on the assumption that motor sergeants will be qualified mechanics before taking the course.

In gunnery:

¶ A "must" for all artillery officers who have not had training in the target-grid method of fire is the new extension course "Fire-Direction Center Technique" (subcourse 30-12 FA). Lessons outline the workings of the latest fire-direction procedures using the target-grid method and cover the duties of all FDC personnel.

In communications:

¶ A new course for communications chiefs has been added in the Department of Communications.

In MOI:

¶ For cadremen of new units and for civilian component instructor teams, a special eight-hour course in methods of instruction has been instituted by the Department of General Subjects. Training Film 7-295 (Military Training) is still being used in this course despite its nine-year vintage. It remains the best illustrative material available on this subject.

Additional new extension courses

Subcourse 30-6 (Infantry Tactics: The Company). Organization and missions of the infantry, rifle, heavy-weapons, heavy-mortar and tank companies; tactical employment of the reinforced rifle company in the movement to contact, the attack and defense; functions of the artillery forward observer.

Subcourse 30-9 (Artillery Intelligence). Collection, evaluation, interpretation and dissemination of information and intelligence; artillery intelligence functions in the battalion, division, corps; counterintelligence measures; artillery intelligence in special operations.

Subcourse 30-12 FA (Fire-Direction Center Technique). Organization and functions of fire-direction center; observed-fire charts; surveyed-firing charts.

Subcourse 30-19 (Celestial Orientation for Artillery). Elementary astronomy, approximate azimuth and determination; stellar observation; solar observation.

Subcourse 40-7 (Infantry Tactics: The Battalion). Organization and tactical employment of the infantry battalion to include advance guard, attack, defense, outpost, cooperation with tanks; functions of the artillery liaison officer and forward observer.

Subcourse 40-9 (AAA Tactics, General). General organization and missions of AAA; characteristics and capabilities of AAA matériel; control of fire, security against air attack; employment in rear areas, in combat zone, and against ground and naval targets.

Subcourse 40-21 AAA (AAA Gun Battalion). Organization; communications; administrative and tactical functions; protection of small, large, and multiple objectives; relationship of the battalion to its batteries and to higher echelons.

Subcourse 40-22 AAA (AAA Automatic Weapons Battalion). Organization; communications; administrative and tactical functions; tactical employment; relationship of the battalion to its batteries and to higher echelons.

Subcourse 50-8 AAA (Flak Analysis). Principles of construction and uses of flak computers for analysis of AAA defenses; determination of flak countermeasures.

Civilian components—Artillery

Kits of training material for students and instructors hit the mails to the sixty-two ORC school centers on October 1.

The first issue of the *ORC Bulletin* for Artillery Reserve officers was mailed out by TAS on September 1. Seventeen thousand were in the first mailing and were sent to the chiefs of the military districts for local distribution.

First- and second-year ORC staff training program material has been shipped to ORC units. The third-year material is now being assembled and should go into the mails this month.

Third-year staff training program material for National Guard units is also scheduled for shipment.

New manuals and forms

A new manual, FM 6-135, with the imposing title, *Adjustment of Artillery Fire by the Combat Soldier,* has been published. The 86-page manual covers observer procedures in the adjustment of precision and area fire with HE shell. This manual will be of interest to infantry and armored soldiers as well as artillerymen. It can be used to teach indirect fire without having to dig into the bulkier, more technical, FM 6-40 *(Field Artillery Gunnery).*

FM 6-120, the bible for artillery observation battalions, has just been revised in manuscript form by TAS. After checking by AFF, it is scheduled for printing. In addition to the latest training doctrine, the revised manual contains instructions for new survey computation forms; tables of scale factors for converting map to ground distances and vice versa on the universal transverse Mercator grid system; and in it the curved sound base tables have been converted to meters.

TM 9-525 *(Graphical Firing Tables, M39 through M51)* describes the use of graphical firing tables in the target-grid method of fire.

Currently in guinea-pig status is the development of a site graph. With the target range and altitude known, the site (angle of site plus complementary angle of site) for a particular battery is read directly from the graph.

New survey forms

Artillerymen accustomed to using TAS forms for computation of surveys will find that revisions have been made and the forms now have Department of the Army AGO publication numbers.

If you want these forms send your requisition to DA AGO Publications, Washington 25, D. C., as follows:

DA AGO 6- 1: Azimuth and Distance from Coordinates.
DA AGO 6- 2: Coordinates from Azimuth and Distance.
DA AGO 6- 5: Survey Locations.
DA AGO 6- 8: Triangulation and Position Computations.
DA AGO 6-10: Azimuth Determination —Hour-Angle Method.
DA AGO 6-11: Azimuth Determination —Altitude Method.
DA AGO 6- : Two-Point Resection.
DA AGO 6- : Three-Point Resection.

(The publication numbers of the last two forms have not been designated at press time.)

Artillery combat book

For some time now, TAS has been soliciting material for a volume based on artillery combat experience in World War II. Additional material is still needed. Battle accounts, personal and unit experiences, including sketches and accounts of specific events, are desired. Where applicable these accounts should illustrate the tactical situation requiring decision, the decision, and its tactical results, with conclusions if appropriate.

To assist TAS in this effort, and to make it worth while for those submitting such articles, COMBAT FORCES JOURNAL will be glad to receive the manuscripts initially and will use those acceptable, paying the usual space rates, before forwarding them to TAS for use in the

book. In submitting manuscripts be sure to specify that they are to be forwarded to TAS, after screening for possible use in the magazine. Authors will be advised as to manuscripts accepted for publication in COMBAT FORCES JOURNAL. Manuscripts not accepted for the magazine will be forwarded directly to TAS.

AIR FORCE

Air Guard Reorganized

To increase the flexibility and state of readiness of the Air National Guard, all Air Guard units are to be recast in the "wing-base" organization of the Air Force. The wing-base setup provides assignment of a single tactical group to a wing headquarters along with supporting technical and service elements joined in a single autonomous unit. Thus a single wing contains all elements required to both service a combat group and to operate the base from which the wing operates, thus providing for greater maneuverability of units.

There are now 12 wings, 27 tactical groups and 84 tactical squadrons in the Air Guard. These will be reorganized into 27 combat wings, each with a single combat group. There will be 84 combat squadrons in these groups, with normally three squadrons to a group.

Because most squadrons operate from bases other than those where their wing headquarters are located, certain support elements will be stationed with each squadron to provide for sustained separate squadron operation.

SAC Ready

The September issue of *Air Force*, publication of the Air Force Association, has a glowing account of how the Strategic Air Command's plans for immediate dispatch of its squadrons to a fighting front worked when the Korean war began. On Sunday, July 2, the 92d and 22d Bomb Groups were in the United States, the former at Spokane AFB, Washington, and the latter at March AFB, California. On that afternoon the two squadrons got orders to move to the Far East. The first squadron flew out Tuesday and the rest followed on succeeding days. By July 12 the bombers were in action over Korea.

SAC's planning for this kind of operation includes what is known as a "Fly-away Kit." This, in the words of *Air Force* is "a neatly packaged ten-plane deal which gives each squadron all of the spares, including processed engines, that it would require for thirty days of combat." It also details the methods of processing members of the squadrons for movement overseas. The units' B-29s airlifted about half of the officers and men; the rest were transported by MATS and commercial airlines.

Status of Field and Technical Manuals

Here is the latest information we have been able to obtain on the status of Field and Technical Manuals of interest to the combat arms. Manuals now in print which are being revised or new editions are in preparation are not included. Those preceded by an asterisk (*) are *restricted*. It takes about four months to distribute a manual after it reaches the printer.

6-125 (*Qualification Tests for FA Specialists*). New, at printer.

*6-135 (*Adjustment of Artillery Fire by the Combat Soldier*). Revision, at printer.

*7-10 (*Rifle Company*). In print.

*7-15 (*Heavy Weapons Company*). In print.

*7-20 (*Infantry Battalion*). In print.

*7-24 (*Communication in Infantry and Airborne Divisions*). Revision, at printer.

7-25 (*Headquarters Company, Infantry Regiment*). Revision, at printer.

*7-30 (*Service and Medical Companies*). In print.

*7-35 (*Tank Company, Infantry Regiment*). In print.

*7-37 (*Heavy Mortar Company, Infantry Regiment*). In print.

8-35 (*Transportation of Sick and Wounded*). In print.

8-55 (*Medical Reference Data*). In print.

9-6 (*Ammunition Supply*). Revision, at printer.

*9-1901 (*Artillery Ammunition*). Revision, at printer.

10-13 (*Quartermaster Reference Data*). New, at printer.

17-5 (*Armored Force Drill*). In print.

*17-34 (*Amtank and Amtrac Battalion*). Printed.

18-5 (*Tactical Employment, TD Units*). In print.

18-20 (*Tactical Employment, TD Platoon, SP*). In print.

21-5 (*Military Training and Methods of Instruction*). Revision, at printer.

21-8 (*Training Aids*). Revision, at printer.

21-11 (*First Aid for Soldiers*). In print.

*21-18 (*Foot Marches*). New, printed.

21-20 (*Physical Training*). Revision, at printer.

21-22 (*Survival at Sea*). Revision, printed.

21-150 (*Unarmed Defense*). In print.

22-5 (*Drills and Ceremonies*). Revision, printed.

23-5 (*M1 Rifle*). In print.

23-7 (*Carbine*). In print.

23-10 (*Springfield Rifle*). In print.

*23-15 (*Browning Automatic Rifle*). In print.

23-25 (*Bayonet*). In print.

*23-30 (*Hand and Rifle Grenades*). In print.

*23-32 (*Rocket Launchers*). In print.

23-40 (*Submachine Gun*). In print.

23-55 (*Light Machine Gun*). In print.

*23-65 (*Heavy Machine Gun*). In print.

*23-80 (*57mm Rifle, M18*). In print.

*23-81 (*75mm Rifle, M20*). In print.

30-102 (*Handbook on Aggressor Forces*). Revision, at printer.

*44-2 (*AAA Automatic Weapons*). Revision, at printer.

*44-4 (*AAA Guns*). Revision, at printer.

71-10 (*Pathfinder Units*). New, at printer.

*100-15 (*Larger Units*). Revision, printed.

*101-5 (*Staff Organization and Procedure*). New, printed.

Flying Status Restored. Approximately 1,800 rated officers who were removed from flying status under last fiscal year's economy program, now serving in nonflying capacity, will be returned to flying status. Rated officers in grade of major and below may be restored to flying status if they volunteer, are potentially qualified for combat duty, and their return to flying status will further the accomplishment of the command's flying mission.

Rank Policy. Air Force policy providing dates of rank for Reserve airmen recalled to AD states that date of rank of an airman recalled will be the recall date preceded by a period equal to all prior active federal service in equal or higher grades.

High Speed. Heavy bombs were dropped accurately and safely at speeds of 500 miles an hour and more, in tests with jet B-45s at Edwards AFB, Calif. Prior to these tests the highest speeds at which bombs had been successfully dropped were 350 to 400 miles an hour, standard bombing speeds during World War II.

Jet to Stay. The Air Force revealed that its experience in Korea validates the employment of jet fighters in close tactical support of ground combat forces. The plane that it will standardize for this work is the F-84F, an improved version of the F-84E.

INTERNATIONAL MILITARY SURVEY

World Perimeters

Colonel C. H. Lanza

NORTH ATLANTIC THEATER

Secrecy is a major principle of strategy. Yet there is little secrecy in the preparations of the twelve North Atlantic allies. Appropriations for military purposes, organizations of military headquarters and units, the present and prospective number of divisions, with locations are broadcast to all the world. The USSR publishes almost nothing about its present or proposed military moves.

This gives the Soviet Union an enormous advantage. It would be remarkable if the USSR should fail to use the information thus gratuitously furnished in selecting the area and date for other moves. The lack of secrecy is completely one-sided. Where the USSR can plan in full knowledge the North Atlantic allies are kept in the dark.

France. Frenchmen expect an invasion but not immediately. Many of them feel that armed resistance would be hopeless. Nevertheless, if attacked France will fight. If the USSR were to succeed in occupying France, the French would probably debate whether to accept Communist rule and forego any effort of other Western powers to drive the invaders out. Many Frenchmen think that a new "liberation" would thoroughly devastate France, and be worse than Communist occupation. The French do not think that the Communists will wait until France is rearmed by the United States. France no longer objects to rearming Germany, but strongly objects to American arms being given to Germany until after France has been completely rearmed.

In general, French opinion is shared by the Benelux countries and Italy.

U. S. action. On the recommendation of the Joint Chiefs of Staff, the President on September 9 approved "substantial increases in the strength of U.S. forces to be stationed in western Europe." Exact increases are to be contingent on "the degree to which our friends match our actions in this regard. Firm progress for the development of their forces will be expected to keep full step with the dispatch of additional U.S. forces to Europe."

This action appears to have been based upon European fears. The USSR will never permit them to rearm, and until they do rearm they are too weak to stop the Communists. Therefore, U.S. forces must be brought in to deter the Communists while the European nations increase their strength, The day after the President's announcement, General Mark W. Clark, Chief of Army Field Forces, announced that the first American reinforcements would reach Germany by January 1951.

European reaction. European members of the North Atlantic Alliance have been heartened by the promised arrival of American divisions, generally estimated to be ultimately ten in number.

On September 12 Great Britain decided to send another division to Germany, and bring two divisions already there up to war strength. The British home garrison would be increased within a year to five and a half divisions, including an armored division, ready to proceed instantly to any theater of operations. This in addition to Territorial divisions for home defense.

On September 14, Norway announced large increased appropriations for military defense. And on the same day Sweden did likewise. Sweden is not a member of the Alliance, but would probably join it in case of war.

France had already agreed to raise fifteen divisions.

The New York Conference. The Foreign Ministers of the twelve North Atlantic allies convened on September 12. Problems relating to Germany were discussed only by the Foreign Ministers of the occupying powers—American, British and French. The Alliance disapproved an application from Turkey to be admitted as a member. No reason was given, but if admitted Turkey would form a salient hard to defend. This action has nothing to do with the American program for military and economic aid to Turkey, which is proceeding satisfactorily.

On September 18 the Foreign Ministers of the occupying powers made a formal major decision providing that:

(1) Acts of aggression against West Germany will be regarded as attacks on the United States, Great Britain and France;

(2) West Germany is authorized a substantial police force (really military police), under its constituent states, but available to the federal government in emergencies;

(3) West Germany is authorized to increase its production of steel, and allowed to build ships without limitations as to size, provided all this is for the benefit of the Western powers;

(4) West Germany is authorized to reopen its Foreign Office, and may send diplomatic missions to other countries as approved in each case by the occupying powers;

(5) The state of war with Germany will be terminated by appropriate legislation by each of the occupying powers. This will remove numerous disabilities, under which Germans, classified as enemies, now operate.

On September 20 West Germany announced that although the decision of the New York Conference did not fulfill all German wishes, it was an appreciable step forward and would be accepted.

THE USSR

According to British reports all of the Soviet atomic bombs are stored at a single depot, located about 150 miles southeast from Tomsk, in the Kuznetsk Basin. In this area are also reported a plant to manufacture the bomb, in addition to at least three other plants elsewhere. The Kuznetsk depot is near the center of Siberia and would be difficult for the Western powers to raid. To further protect the bombs they are stored in shelters 150 feet underground. Bombs will be flown to theaters of operation only for specific targets. A range for bombing practice is close by the Kuznetsk depot.

Swedish reports state that during this past summer Soviet artillery has conducted extended firing tests of guided-rocket seven-ton projectiles. Firing point was near the former city of Königsberg in East Prussia, and targets on an island

(Continued on page 56)

The Doughboy Deserves Fighting Pay

In a plain-spoken and hard-hitting appeal, Lieutenant Colonel Peter O. Ward comes out for fighting pay for Infantry, in addition to other "breaks," in the September **National Guardsman.** Colonel Ward takes a look at the World War II record and concludes that the Infantryman—GI and officer—got the short end. For example, the average annual pay of enlisted men in 1943 ranged from $1,152 (exclusive of flying pay) in the Air Force to a low of $700 for the Infantry.[1] Grades and ratings—and combat pay of $10 per month if he earned the CIB—increased the take of the Infantryman to an average of $743, "but the ratio remained unequal as the other branches were increased, also," Colonel Ward writes.

* * *

Body Armor

The September **Marine Corps Gazette** considers armor for the infantryman in an article by Captain David R. McGrew. Pointing out that the helmet was objected to on grounds of increased weight when it was first introduced into the French Army in World War I, he notes that body armor meets the same objections.

Light armor was developed in World War I by Army Ordnance but wasn't used much. "It was made from manganese steel, weighed 8.5 pounds, and was able to resist revolver ammunition at a velocity of 850 feet per second. At a later date, leg and arm protection was added to this combination."

In World War II several types of body armor were developed. There were some service tests in combat operations but nothing conclusive was developed. The fact that in the ETO "from 61.3 per cent to 80.4 per cent of the casualties" were from shell fragments makes it "reasonable to assume that any means taken to reduce these casualties merits consideration."

The VT fuze makes protective armor an urgent problem, Captain McGrew writes. The slit trench gives inadequate protection and there "is an increased need for back and shoulder protection."

To give full protection armor would have to weigh forty pounds to the square foot. This makes 100 per cent protection impossible. But, Captain McGrew writes, by "utilizing any one of several different types of new armor material, it should be possible to provide body armor for the infantryman which would be ballistically equal to the performance of the M1 helmet and still be sufficiently light and flexible to be acceptable to the infantryman."

No matter how light the armor is it will still be inconvenient and uncomfortable and the wearer will lose some of his mobility. But, Captain McGrew asks, if the soldier is now carrying a maximum load, how can you add armor? Collective small savings might be made and better supply at the front lines might reduce the load the combat man carries, but he'll still say when the subject is mentioned, "My god! What are they going to hang on us next?"

However, Captain McGrew thinks that when we understand that body armor will reduce casualties and that it is possible for us to reduce the weight of what the soldier now carries to make room for armor, we'll probably use it.

* * *

But We Do Fight

This is no place for philosophic or geopolitical ramblings but a reading of various articles in the summer issue of the Air University **Quarterly Review** brought to mind again the unfortunate conclusion that the whole theory of strategic air warfare is essentially isolationist. While admitting that one airplane doesn't make a squadron or one sentence a whole article, the thought wouldn't down as we went through the whole **Quarterly Review,** from the "prize editorial" at the beginning through the book and periodical reviews at the end. The editorial flailed at the not original discovery that we Americans seem to be of two minds when we think of war and peace. One mind rejects war while the other, if prodded, will admit war is highly probable. This "National Schizophrenia"—that's the title of the editorial—leads us to intimate, the editorial says, that "we shall not fight to uphold our principles of freedom and democracy." One quick answer to that is that we always have fought when the die was cast—Korea is an example.

In "Air Power and the Heartland," Lieutenant Colonel Harry A. Sachaklian examines Sir Halford J. Mackinder's theory of the heartland and concludes that the emergence of air power is the element that has invalidated the theory and that the rulers of the heartland can only be defeated by the creation "of an air power capable of performing that task and the development of a willingness to use it when necessary . . ."

If this is all pretty high-level stuff, it is because most of the **Quarterly Review's** material can be so labelled. It is not an easy magazine to digest—or to read. In passing, though, we must give it credit for open-mindedness. In its "In My Opinion" department twelve pages are given to a refutation of an article in a previous issue by Major General Orvil Anderson on "Air Warfare and Morality." In the refutation, Lieutenant Commander Stuart B. Barber, USNR, criticizes some of the strategic-bombing enthusiasts' most deeply held theories and calls for a new strategy which will put an end to "the fatalism that since everything must inevitably blow up anyway we had better do it first and best." Our present strategic concepts, Commander Barber writes, "are as rigid and archaic to the needs of the day as any that battleship admirals and infantry generals ever had . . ."

And he continues: "The world, progressing willy-nilly, poses this question: Will the Air Force progress with it, and lead it out of its morass or will the Air Force remain rigidly frozen to a thirty-year-old concept which leads as surely to extinction as did the dinosaur's peculiar direction of growth? Is the Air Force mind still young and inquiring or have its arteries started to harden? . . ."

* * *

What Kind of Tank?

In its July-August issue **Armor** published the thoughts of six "military analysts" on the future of the tank. Now in its September-October number the editor gives space to six noncommissioned officers each of whom tells "What I Want in a Tank." It adds up to preferring mobility and fire power at the expense of

[1] Here are Colonel Ward's figures:

Air Forces (exclusive of flying pay)	$1,152
Ordnance	875
Signal Corps	780
Armored Force	760
Quartermaster	750
Antiaircraft Artillery	730
Field Artillery	730
Engineers	720
Medical	707
Infantry	700

heavier armor plate. None of our present tanks quite suits them although the M46 seems to come close. More powerful engines and a gun with a Sunday punch are the two big requirements. Other items: lower silhouette, heavier communications equipment, improved mounting of machine guns, cross-drive transmission, highly mobile gun turret.

In another article General Hasson von Manteuffel, the German panzer commander of World War II, asserts that "infantry as it was known in the period 1939-1945 is no longer the decisive arm. Rather, I consider as the decisive team the airborne forces fighting in closest collaboration with armor and air support." Just what the bulk of the airborne forces could consist of if not infantry, Manteuffel doesn't say. The guess is he means men armed with weapons of the infantry even though he doesn't call them that.

Manteuffel's vision of future combat follows pretty closely on our own Army's thoughts, embraced perhaps in these words of the former German commander: "Of decisive importance are speed in thought, speed in action, speed in sizing up a situation and—speed in the execution of orders . . ."

In "Modern Mobile Warfare," Lieutenant General Sir Giffard Martel, British Army retired, and former commander of the Royal Armoured Corps, sees armor as the deterrent to Soviet aggression in Europe. ". . . it is my belief," he writes, "that if the Western Nations possessed an integrated force of twenty armored divisions the Russians would never dare to advance aaginst us." He would have the twenty divisions consist of motorized infantry and artillery in the "right proportions" and the tanks "would have to be very mobile."

* * *

Down with Cosmoline

If dicyclohexylamine nitrite is an impossible name, volatile corrosive inhibitor is much better, if still mouth-filling and not very self-explaining. But if you have ever spent dreary hours cleaning cosmoline from weapons you'll roll the sound of volatile corrosive inhibitor over your tongue. For VCI—if we may use the initials—is a preservative recently developed to protect weapons from corrosion. Weapons packaged by the process can be used by merely wiping them off with a cloth. The cheering news of this development appears in the September-October **Ordnance.**

In a leading article in **Ordnance,** Major General J. F. C. Fuller holds that present-day wars are based on man's need for food. He quotes Woodrow Wilson as saying in 1919 that World War I was a commercial and industrial war, and that World War II was fought not against Hitler's perverted political doctrines but the Nazis' success in "economic experiment based on direct barter and subsidized foreign trading . . ." Today Communish "holds that it is necessary to liquidate existing civilization" and the "world is now faced with a second Reformation, a kind of inverted Calvinism; hence the nature of war today is taking on a religious, or ideological, in place of a political, form."

In such revolutionary times the methods of waging war change rapidly, General Fuller continues, and "today the means which enable . . . war to be waged the more effectively are strategic bombing and strategic propaganda, the one rendered possible by aircraft and the other by radio." The Communists are masters of the new propaganda and the U.S. of strategic bombing. This means that as long as the cold war lasts the Communists have all the advantages. For that reason it is possible that "the Russian World Revolution stands or falls by winning or losing the present cold war," General Fuller says.

To counter the Communists we need "an aim, a gospel, and an instrument," he writes. The aim should be "to eliminate the diseases of industrial civilization," the gospel should be a "Democratic Charter, as appealing to the masses as is the Communist Manifesto' 'and the instrument should be "a strategical brain organized to wage war on planned ideological lines."

* * *

Civil Defense

If you are interested in civil defense to the extent of really digging into the problem you will want a copy of the August-September issue of **Bulletin of the Atomic Scientists.** The whole issue is given over to the subject and not the least valuable part of it is the selected bibliography of civil defense which it publishes in four pages. Anyone, officer or civilian, engaged in civil defense planning will certainly find the issue a mine of information.

But the bibliography is particularly valuable in listing many unknown references.

* * *

Field Exercises

The October issue of the Command and General Staff College's **Military Review** concludes a two-part article on "Preparation and Conduct of Field Exercises"—a subject that is bound to have considerable importance in the next few years as our Army increases in numbers and combat proficiency. The authors, Lieutenant Colonel Harry J. O'Neil and Major E. E. Steck, summarize their study by emphasizing these points:

Small-unit field exercises and major-unit mobile command post exercises may be held during all phases of training, but major units should not attempt an exercise until the training of its components has developed to the point where each can derive constructive benefits from the exercise.

Commanders and staff must be trained in their duties before the exercise begins.

The field exercise must accomplish a definite objective and the tactical situation should illustrate the principles it is desired to cover.

Only the most capable officers should be detailed as umpires and they must be given time to study the situation and terrain before the exercise begins.

The umpires and the Aggressor force can give mobility and continuity to an exercise if they understand what is desired.

The critique is an integral part of a field exercise.

WORLD PERIMETERS

(Continued from page 54)

in Lake Onega. This is a range of about seven hundred miles—a substantial improvement over the German V-2. If true, Soviet artillery from sites now available could shell the greater part of western Europe. There is no information as to the accuracy of these shoots.

Synthetic-oil production has greatly increased. Four of these plants have been identified in East Germany and have a production annually of 500,000 tons each. An unknown number of similar plants are scattered in the Ukraine and other areas. There should be no assumption that the USSR will be unable to wage a long war for lack of oil. That assumption was made regarding Germany in 1939, and was erroneous. It may be equally erroneous regarding the Soviet Union.

East Germany forces are reported to be increased to sixteen divisions by the end of 1951. Thirteen divisions will be mechanized and equipped with SP artillery, and remodelled T-34 tanks. Divisions are small—around 8,000 men. Attached air units have a new-model YAK fighter and some medium bombers. East Germany factories are working three shifts on war orders. There being a shortage of workers, Chinese have been reported arriving in the former Silesia area to supplement local labor.

"MAN—IS SHE ROUGH & TOUGH!"

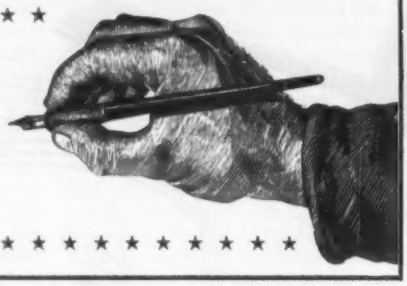
Today's Army field force leaders are alert to the increased support they may expect from the new Thunderjet F-84-E . . . now demonstrating on active service the qualities which make it so flexible for air defense and air tactics. The Thunderjet is being used by the Air Force and the National Guard, not only as an interceptor and escort fighter, but a deadly fighter-bomber as well. It can maneuver at maximum altitudes required of independent air operations or perform vitally important close support assistance to ground force troops when needed. It is the longest range jet fighter in service today.

The F-84-E is equipped to carry an armament load of two thousand pound bombs . . . as many as 32 high velocity rockets, or napalm or incendiaries in addition to its full load of 50 calibre machine gun ammunition plus fuel for any required mission. Republic Aviation Corporation, Farmingdale, Long Island, New York.

REPUBLIC AVIATION

Makers of the Mighty Thunderbolt • Thunderjet • XF-91

TO THE EDITORS



The New Magazine

To the Editors:

I have read the first issue of the COMBAT FORCES JOURNAL with great interest. Because of the increased and varied sources for material, the new journal should prove to be more interesting and beneficial than either the *Infantry Journal* or the *Field Artillery Journal*.

The increased necessity for positive teamwork between the infantry and the artillery makes it imperative that members of each of these branches be as familiar as possible with the methods and techniques of the other. A sound basis for encouraging this mutual understanding is the presentation in interesting, readable form of articles, some of which are peculiar to each arm, while others are common to both, within one publication. This, at last, has been accomplished, and I feel certain that your new magazine will prove to be of great value to the infantry and the artillery, in particular, and to the armed forces, in general.

Sincerely yours,
MAJ. GEN. EDWARD M. ALMOND,
Chief of Staff,
(now Commanding General,
X Corps).
General Headquarters
Far East Command
Office of the Chief of Staff.

* * *

To the Editors:

It is most gratifying to note how satisfactorily the COMBAT FORCES JOURNAL, successor to the *Infantry Journal* and *Field Artillery Journal*, has fulfilled its intended purpose with the very first issue.

The new publication is comprehensive in scope and effectively presented. But overshadowing all other factors, in my personal judgment, is the role it serves in reflecting the unity and accomplishments of the Armed Forces as a team.

You and your associates of the newly organized Association of the U. S. Army are to be congratulated on having seen and met the very real need for a publication which speaks for a great combat team with one voice.

I am confident that the Infantry and Field Artillery associations, through the new unified Association, can better serve the combat arms, and through the COMBAT FORCES JOURNAL will present comprehensive information to further knowledge of the members of the team.

Sincerely,
LT. GEN. S. J. CHAMBERLIN.
Headquarters Fifth Army
Chicago 15, Ill.

* * *

Battle Awards by Poll

To the Editors:

Recently I read a column by Cleaves Jones in the Los Angeles *Times* on defects in the armed forces' method of distributing combat awards. He cited figures from *Infantry Journal* comparing World War II medal distributions with combat fatalities, division by division.

I would like to offer a suggestion which might be of some aid toward a more equitable distribution of combat awards. It is not a panacea, but simply a method supplemental to those now in effect.

Whenever a combat unit finds the time, as when it is in reserve or at rest, a poll by secret ballot might be conducted at the platoon level, to find which men, if any, the platoon considers deserving of combat awards, with their reasons. This method might avoid some of the inevitable injustices that crop up now. Often a man who is an excellent combat soldier does not come to the attention of a superior officer because he has not performed spectacularly. But the men of the platoon are generally aware of such individuals, being in constant contact with them, and yet may hesitate to speak up about them.

I recall a member of my platoon who was easily one of the best combat soldiers in the company, and yet for some reason was never awarded a combat honor, although others less deserving did receive them. And probably every ex-infantry mudder remembers similar men. A platoon poll would probably have assured such men of their due. Most of the old-timers in my platoon, for example, shared my opinion of the excellent combat ability of the man I have mentioned and were as puzzled as I at his failure to be honored.

I have one additional comment on *The Infantry Journal*'s figures which Mr. Jones cited. According to Mr. Jones you gave the 82d Airborne combat fatalities for World War II as 1,581. I was a member of the 508th Parachute Infantry Regiment and note in the history of that unit published by the Infantry Journal Press that it suffered 539 KIA during the three campaigns in which it saw front line duty, Normandy, Holland (Rhineland) and the Bulge (Ardennes). The 508th was attached to the 82d Airborne during these campaigns.

In view of the fact that the 504th and 505th Parachute Infantry Regiments plus the 325th Glider Infantry Regiment, organic components of the 82d, saw a good deal more combat than the 508th, and considering the combat fatalities which must have been incurred by the artillery, signal, antitank, medical and headquarters units of the 82d, most of whom also were in action for substantially longer periods of time than the 508th, it is hard to believe that the 508th had more than a third of the total KIA of the 82d. In addition, the 507th Parachute Infantry Regiment was attached to the 82d for Normandy and its KIA should properly be included in the division total.

TONY GERAM.
151 N. Cypress
Fontana, Calif.

* * *

College and the Infantry

To the Editors:

From the distance of years I can see Pfc. Moore's point in the September issue. Maybe he hasn't been away from school long enough to realize that college doesn't count. Boy, I spent three years at Texas Mines, class of '31, and I soon found out the less I said about it the sooner I got a job. My AGCT was 134 too.

You know what made me a drill sergeant? My big mouth and a genuine interest in the boys I trained. I have always said, and still say, I'd rather have a son of mine serve a three-year hitch in the Army than graduate from college. I am thankful I was taught to read. I like to read. Read everything. Writing's all right, I like to try. Ciphering, hell, it never helped me hold on to any money. But reading and writing are enough. The rest comes from contact with people. Working with people against other people, the rough and the smooth, makes soldier material and OCS material too.

As the JOURNAL said about Pfc. Moore's letter, there is nothing in civil life that prepares you for the infantry (and there's nothing much you learn in the infantry that will get you a job in civil life). There may be something hidden inside you that soldiering will bring out. And there may be enough of that something to make you an OCS candidate. But that something is neither helped nor hindered by a college education.

Pfc. Moore's "numerous attempts to be helpful" may have been misunderstood by his superior. He may have "squelched his initiative" because he thought somebody was trying to tell him how to do his job. Pfc. Moore may have sounded off about

his college education and his superior might have resented it. He may not have finished the 8th grade himself.

There is such a thing as keeping your mouth shut at the right time.

Anyway, what's the matter with being an assistant gunner in a mortar squad? We can't all be captains.

Maybe the Air Force is a better place, with time to compare AGCT scores by the hour.

SFC Jack Aclin, Jr.

Co. E, 117 Infantry
Tennessee National Guard
Paris, Tenn.

* * *

Leaders' School

To the Editors:

I have just finished reading the September issue of Combat Forces and I want to add my congratulations for something worth a soldier's time to read.

What especially brought me to pen in hand was Lieutenant Colonel Donovan's letter on Leadership and Morale. I do not know much about the Marine Corps other than what I have read in my eleven years with the Army, but I do know he has made a good point. This point has also been covered to a certain extent in the Army.

Several years back the Army started a "leaders' course," and since that time has increased, decreased and is now increasing again the number of such throughout the country. The Army's oldest Leaders' Course is now my present assignment and I have been with it for over a year.

Just what does this school turn out in the way of potential leaders? The man who graduates is not a leader but he has demonstrated to an outstanding degree that he has leadership potentialities. And as he gains more experience and gets responsibility, he will stand an excellent chance of proving out.

The average man who attends this school is between seventeen and nineteen with a 9th grade education, and he has just finished his cycle of basic training. He is actually still a civilian in a lot of ways. He had to volunteer and he had to be recommended by his unit commander.

During the first four weeks, he learns how to give instruction and how to teach dismounted drill and physical training. He gains some knowledge of leadership, and relations with subordinates, and of morale, combat formations and men's welfare.

His last four weeks are spent like a baseball player. He is farmed out to a training company where he acts as a cadre member helping a unit commander. He is given jobs of responsibility and watched like a hawk to see if he is worthy of graduation.

That is a brief outline of the training a man has had who has an MOS 4745(L) beside his name. If you have received one make use of him, he can be of lots of help. He has self-confidence, knowledge and fortitude.

This particular school's military designation is Headquarters and Service Company, 23d Armored Engineer Battalion.

Lt. James W. Dollar.

Leaders' Course
3d Armored Division
Fort Knox, Ky.

* * *

Carbine and Jungle Hammock

To the Editors:

I hesitate to write any sort of letter to the editor after the butchery and distortion you wrought upon a letter of mine two years ago. However, I still have a strong belief in the principle of exchanging ideas.

Do you know whether anyone has given thought to improving that peashooter known as the carbine so that troops will have real confidence in it? I believe this could be done by giving it a good man-stopping revolver cartridge like the .38 Special or .357 Magnum and without increasing the weight of the carbine.

I notice that the jungle hammock was mentioned again on page 16 of the August issue. Obviously it should never be used on a rifle company's perimeter—but we found it to be worth its weight in gold whenever we were a bit farther back.

Lt. A. F. Brant.

P. O. Box 112
Salisbury, N. C.

* * *

Round Pegs

To the Editors:

I was interested to notice the article entitled "What's the Best Use of Brains?" in the September issue of your magazine. I have often had similar thoughts both during my first hitch in the Marine Corps and during my present one in the Army. But I have learned that there is a definite plan by which you can find the square or round hole where you belong. Obviously the Army has many things to do other than locating the correct occupational cubicle for the individual soldier. And obviously only one man is actually capable of knowing just where said individual would be happiest and most successful, and of the most use to the Army—*or* Navy—*or* Marine Corps.

The only real problem, then, is how to wake John Doe up to the fact that it is *his own* job to look around and find his best spot. It is well and good to take tests to find out what work you are suited for, but no kind of test can take the place of individual initiative.

Once you find out *what* you know, whether you find out by the written test method or by scanning of your own mental apparatus, then the next thing to do is to find out where in the service this particular talent can best be used. If you find after one complete hitch that there is no place for your talent(s), then hie thyself to the hills for either you have not looked hard enough or you are too much of a specialist even for today's Army of specialists. Not every man can adapt himself to the Army nor can the Army be expected to adapt itself to every man. There is neither the time nor the necessity for such adaptation.

In short, a square peg *can* go into a round hole, and the space left over is space for the man himself to fill out as he adapts himself to the work he has, and becomes the type of man the Army needs.

Pvt. Robert A. Dayton.

Public Information Office
82d Airborne Division
Fort Bragg, N. C.

* * *

"Where To Look"

To the Editors:

I should like to comment on the article "Where to Look" which appeared in the July *Infantry Journal*. My points fall into three categories—military, philosophical and mathematical—which I'll cover in that order.

The methods described for locating enemy artillery and mortars are good and any S-2 is to be commended for any steps he takes to do such work on his own level. It is important, however, that we all be aware of the need for passing such information up to Division or Corps Artillery, as appropriate, so that the countermortar and counterbattery sections can make use of it.

It is true that artillery observation batteries are especially equipped for sound, flash, and radar ranging. But it is everyone's job to put those shellreps and mortreps through. I do not speak from personal experience but I have had close acquaintance with an officer who did a considerable amount of combat counterbattery and countermortar work. He repeatedly stresses the importance of all such information even when it is of the most fragmentary kind. The azimuths from the OPs shouldn't stop at the regimental S-2's shop if a sound, coordinated counterbattery and countermortar program is to be conducted.

I also think the article points up well the importance of avoiding stereotyped tactical methods. The enemy, too, has maps, compasses and protractors.

I cannot agree with the author's statement that the reasoning process which resulted in patrols being dispatched to search a cemetery is "typical of mathematical probability." It is a form of scientific reason-

Changing Station?

If you are moving don't fail to notify the Circulation Department of the Combat Forces Journal of your change of address.

Send notice to:
Circulation Manager
Combat Forces Journal
1115 17th St., N.W.
Washington 6, D. C.

For ALL Services

NEW MILITARY RATES

LIFE, one year	$5.50
TIME, one year	4.75
NEWSWEEK, one year	4.50
SATURDAY EVE. POST, one year	4.75
LADIES HOME JOURNAL, one year	2.50
HOLIDAY, one year	4.00
LOOK, one year	3.00
QUICK, one year	3.00
DOWNBEAT, one year	4.00
PATHFINDER, one year	2.00
AMERICAN PHOTOGRAPHY, one yr.	2.00
COUNTRY GENTLEMAN, one year	.75

For active members of the armed forces and military units. These rates apply in U.S. or APO and FPO.

Listed below are guaranteed money saving offers which can save you 20% to 50% under single-copy prices.

MAGAZINE	1 YR.	2 YR.	3 YR.
American Magazine	$3.00	$ 5.00	$ 7.00
Colliers	5.00	8.00	10.00
Combat Forces	5.00	9.00	12.00
Coronet	2.50	5.00	7.00
Cosmopolitan	3.50	5.50	7.50
Esquire	6.00	10.00	12.00
Field & Stream	2.50	4.00	5.50
Magazine Digest	2.75	5.00	7.00
Mechanix Illustrated	1.50	3.50	5.00
New Yorker	7.00	11.00	———
Popular Mechanics	3.50	6.00	8.00
Popular Photography	3.00	5.00	7.00
Readers Digest	2.75	5.00	7.25
Redbook	2.50	4.00	6.00
Sport	3.00	5.00	7.00
True	3.00	5.00	7.00
True Detective	3.00	4.50	6.00
U.S. News & World Report	5.00	8.00	10.00

We handle every magazine published. Ask for FREE catalog. Special attention to detachment and unit fund orders. Send for catalog.

SHEPARD W. DAVIS & CO.

Authorized Representatives

482 BAY ST. STATEN ISLAND 4, N. Y.

Guaranteed Service Since 1929

ing which is analogous to that used in many scientific fields. When a doctor reports in a medical journal that for a certain disease he treated 122 patients with a drug and that 75 were completely cured, 26 were considerably relieved and 21 showed no improvement, he is indicating that there is a basis for belief that the drug will have value as a treatment for the disease. Later on as additional statistics on the use of the drug are collected and controlled experiments are performed, this basis may be reinforced. It may be possible to say to a patient with the disease, "If you are treated with this drug it is highly probable you will be cured."

Mathematical probability, however, measures the probability of an event. It says, for example, that if you throw a single die, the probability of an ace is 1 in 6. It does this by using abstract dice which are absolutely square and of uniform density so that any one number is just as likely to turn up as another.

The concepts and the functions developed under mathematical probability theory can be applied in sciences where the collection of adequate statistics is possible. Such fields as genetics and actuarial science are two examples. The mathematical treatment of such subjects, however, always involves measurement of actual quantities.

In the example of searching cemeteries no measurements were made and the reasoning cannot be described as mathematical. The fact that it is a form of scientific reasoning, and not the best form at that, should not obscure its value. It is the best that could be used and it is far better than none at all.

Two final points are added in the interest of mathematical exactness. It is not a property of a circle that points of its circumference are equidistant from the center. That is the definition of a circle which is the class of points in a plane at a fixed distance from a given point. In logic that which defines an object is not a property. It is not a property of water that its molecules contain two atoms of hydrogen and one of oxygen. Its slight compressibility and its vaporization at a certain temperature and pressure are *properties* of water which is the substance whose chemical formula is H_2O.

Finally, the statement that "only three points are necessary to determine a circle" is correct only if qualified by the statement that they do not all lie on the same straight line.

MAJ. ROBERT S. STACY.
Youngstown College
Youngstown 2, O.

* * *

Company Clerks

To the Editors:

Probably the biggest mistake made in dreaming up the tables of organization for all the many companies is the one which has been made most frequently—assigning the grade of corporal to the company and personnel clerks.

In the first place, it's a mighty thankless job. A good clerk doesn't quit work at the end of duty hours—there is simply too much work to be done. Besides that, it is really rough on the first sergeant and personnel sergeant. They spend a year or so getting clerical help properly trained—by this time the clerk is a corporal, looking for promotion to sergeant—so we make him a sergeant—but Headquarters immediately says "you can't keep him because you don't have a T/O vacancy." So we lose the clerk to Headquarters.

Let's give the clerk the rating he deserves, and perhaps we'll all have less trouble finding clerical help when it is needed.

M/SGT. JAMES H. BAGWELL.
11th Airborne Rcn. Co.
Fort Campbell, Ky.

COMBAT BOOTS

FAMOUS FORT KNOX STYLE
Paratroop Type

You told us how to make the boots—that is why thousands of pairs have been sold with complete satisfaction to everyone from CG's to PFC's.

Genuine retanned top-grain uppers. Dark brown color; smooth on the outside for high polish. Has every desirable feature.

$11.75 PAIR

PARCEL POST PAID

SIZES
4½ to 14
B to EEE

Boots are available at wholesale prices when purchased in lots of 12 or more pair at a time. Write for wholesale prices.

We have a complete stock of all articles of the uniform. If we haven't got it, we will make it to order. Tell us what you want and the quantity to be purchased.

QUALITY EMBLEM and INSIGNIA CORP.
99 LEXINGTON AVENUE
NEW YORK 16, N. Y.

SPECIAL FINANCING SERVICE to COMMISSIONED OFFICERS and WARRANT OFFICERS

Army, Navy, Marine Corps, Coast Guard, Air Force and Public Health Service

No restriction on movement of cars

WORLD WIDE FSFC SERVICE TO OFFICERS

By an Organization Founded in Nineteen Hundred and Twenty-four for the Purpose of Rendering Financial Assistance to Officer Personnel at the Lowest Possible Rates.

FEDERAL SERVICES FINANCE CORP.
Home Office
710 Jackson Place Washington 6, D. C.

BRANCH OFFICES

Warrington, Fla. 31 Murray Blvd.
Long Beach, Calif. Ocean-Center Bldg.
Honolulu, T. H. Pier 11 Bldg.
Columbus, Ga. Martin Bldg.
Fayetteville, North Carolina 227 Franklin St.

ANNOUNCEMENT

Mr. S. W. KLUGMAN, one of America's outstanding designers, is now in charge of our Tailoring Department.

In acquiring the services of Mr. Klugman, we are now in a position to offer our usual high standard quality of Military Uniforms and civilian clothes at moderate prices.

Drop in or write for prices.

DONDERO **A. H. DONDERO INC**
1718 PENNSYLVANIA AVE., N.W. WASHINGTON 6, D. C.

BOOK REVIEWS

A Soldier Is In It

ACROSS THE RIVER AND INTO THE TREES. By Ernest Hemingway. Charles Scribner's Sons. 308 Pages; $3.00.

Heading up this book is a note. The note says: "In view of a recent tendency to identify characters in fiction with real people, it seems proper to state that there are no real people in this volume: both the characters and their names are fictitious. The names or designations of any military units are fictitious. There are no living people nor existing military units presented in this book."

This, I presume, is somebody's idea of a joke.

Across the River and Into the Trees is the story of a brief period in the life of Richard Cantwell, a beat-up colonel of Infantry who had been briefly a brigadier general of the 4th Infantry Division, one of Mr. Hemingway's fictitious units. Colonel Cantwell, at this point in his career, is assigned to TRUST, occupying Trieste, and the book itself is laid in Venice and the country around it.

Cantwell is a man who had fought in Italy in World War I and had been an observer in Spain, fought again in World War II, and, all in all, been shot up more than one man has any right to be. At the moment of this book, having found the greatest experience of his life in the love of a very young Italian countess, the Colonel is waiting for one last heart attack to kill him off.

Understandably enough, this makes for a certain savagery on the part of the Colonel who, you gather, had never been a very tame citizen anyway. The very young countess is more the abstraction, Woman, than any specific lovely. In certain circumstances, this might be most effective, but in this novel, primarily one of mood created by the two main characters, it is disconcerting to have the second principal to a love affair not much more than a body in which are contained all the womanly virtues and desirabilities.

The Colonel, though, is a different matter. Here Hemingway has created a living, highly complex man, a man who had been a fine troop leader—tormented as much by his inability to advance beyond the point he has reached, as by the failure of his heart. To Cantwell war is and has been a science, though not a pleasant one, and he is unable to bring himself to accept its passage into the vast complexities of the world's biggest business, with its attendant huge staffs and rear echelons.

Unhappily, Mr. Hemingway's idolatry of "tough beat-up old bastards" is slapped on a little thicker than is good for the book, but his Richard Cantwell is nevertheless as good and fair a characterization of a professional soldier of the line as this reviewer has seen. One might almost call the book—though it is doubtful if it was intended as such—an answer to some of the novelists whose officers were either sadists or homosexuals.

Aside from the meat of the novel, Mr. Hemingway's descriptive passages—of duck shooting on a cold morning, of Venice itself, of the Venetian countryside—are as good as anything he has ever done.

Across the River and Into the Trees will not stand up beside Mr. Hemingway's major work. But even with its flaws, it is far stronger work than today's reader of novels will have been accustomed to.

Mr. Hemingway's comments on those fictitious characters and military units —through the Colonel, of course—are also most instructive.

But above all the book has a *soldier* in it.—O. C. S.

The Real Taste of the Pacific War

OUR JUNGLE ROAD TO TOKYO. By Lt. Gen. Robert L. Eichelberger. Viking Press. 289 Pages; Index; $4.50.

After waiting five long years, we are at last given an adequate accounting of the ground war in the Pacific. In most respects General Eichelberger's report is so good that the results are well worth the waiting. Though General Eichelberger was a three-star commander, this is no high-level, "big-picture" story of our Pacific war. General Eichelberger received his Pacific baptism in the front lines at Buna in New Guinea, and he never lost the ability to look at war from that level. These memoirs are singularly devoid of bombast and are remarkably well told.

To summarize General Eichelberger's World War II experience is to outline the contents of this book. He really got started when MacArthur designated him to assume command of our faltering forces at Buna. From then on, as I Corps commander and later as commander of the Eighth Army, he fought on up New Guinea, through Hollandia, Wadke, on to Biak, Morotai and into the Philippines.

His frequent visits to the front lines increased his knowledge of the problems of companies and platoons and endeared him to his soldiers. He led a charmed life in a theater where the mortality rate on general officers was extremely high. At Buna, for example, three American generals were shot and the one farthest removed from the Japanese lines was 75 yards away when hit.

This book was finished before the outbreak of hostilities in Korea. However, there are several points that invite striking comparison. One of the few criticisms which Eichelberger advances against MacArthur's GHQ, is to decry the premature announcement of victories, when much hard fighting remains to be done. The morale of the units still getting shot up in battles which have been announced as over, suffered immeasurably. Apparently, this situation still exists, with the retaking of Seoul in September the freshest example.

The Pacific war was the real proving ground for the case for unification of our armed forces. Excluding the running debates at the top levels as to the artificial boundaries separating the commands of Nimitz and MacArthur, unification at the working and fighting level was an accomplished fact before the great postwar battle of Washington. The Army couldn't move from island to island without the Navy and the support of the

then Army Air Forces. The AAF couldn't keep up with the war unless the Army took and held advanced air bases for them, and the Navy had to depend on the Army as well to secure their advance bases. And of course, it still remained the Army's job to meet and defeat the enemy on the ground.

At an even lower level, soldiers, sailors and airmen, irrepressible Americans all, were blissfully unaware of any unification difficulties. The swapping of beer, refrigerators, fresh meat, plane rides, jeeps, and so on wiped out almost every vestige of so-called "unhealthy competition" at the troop level. Regardless of uniform, these young men were all boys far away from home, in a dangerous business, and they didn't have time to stand on ceremony. You'll sense that picture as General Eichelberger's story unfolds.

The General's innate modesty and humility are indeed refreshing. Here is a man who commanded a large army, through some of the bitterest fighting of the war and yet his story sparkles with the praise of others. Three times, while Eichelberger was still a corps commander, the War Department requested his return so that he could be given an army in Europe and most certainly get his fourth star, and each time MacArthur denied the request. Later on, when on occupation duty, Eichelberger himself turned down an opportunity to get the fourth star as Eisenhower's deputy chief of staff. But one wonders why, since he was too valuable to release, MacArthur failed to recognize his outstanding contribution as an Army commander by awarding him the fourth star he so richly deserved. General Eichelberger hints at the background in touching on General Krueger's pique at the formation of the Eighth Army which General Krueger may have felt would lessen the importance of his Sixth. At any rate, it is to Eichelberger's credit that these points are passed over lightly and with no apparent bitterness. Even his comments on the unpopularity of General Richard K. Sutherland, MacArthur's chief of staff, are mild.

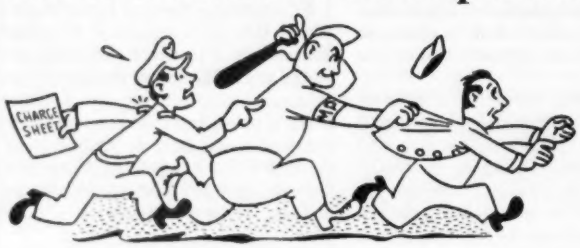
In answer to those who have criticized the use of the atomic bombs against Japan, the reflections of General Eichelberger, a troop commander, are worth noting. As he was flying in to occupy Japan, he looked down as they were crossing Kanto plain:

> Across which—save for the atomic bomb—I would have marched my men in an operation which could have been nothing less than a direct assault. In that rolling land of streams and cross ridges and tunnels, garrisoned by fierce and undefeated soldiers defending their homeland, our casualties could not have been less than one hundred thousand men.

Fighting in the steaming, dank, stinking jungles against a fanatical and wily enemy must be experienced to be appreciated fully. General Eichelberger, with an editorial assist from Milton Mackaye, has told it better and retained more of the real taste than any writer I have read. Whatever Mackaye's contribution to this volume the personality and character of General Eichelberger shine through and *Our Jungle Road to Tokyo* ranks among the top three World War II memoirs. Military men of all branches will enjoy it thoroughly and so will civilians, for there is a notable absence of military jargon. General MacArthur once said "No army of this war has achieved greater glory and distinction than the Eighth." Its commander has done a fine job of recording its exploits for posterity.—R. F. C.

NEW STAR IN THE NEAR EAST. By Kenneth W. Bilby. Doubleday & Company. 279 Pages; Index; $3.50. A report on Israel and the Moslem countries by the only American correspondent who saw the war from both sides.

YOU could be in this picture!



If at some time you do find yourself in the situation above—either as the officer with the charge sheet, the M.P. or the accused—you'll want to know what the score is. In the old army you would know what to do —but will you when the new Uniform Code of Military Justice goes into effect on May 31, 1951?

The Code provides one set of disciplinary law for all members of the Armed Forces and contains many important changes to the old Articles of War.

To help you understand these changes and how they will affect you, Colonel Wiener has set up, side by side, the Uniform Code of Military Justice and the Articles of War for comparison wherever changes occur. He also gives you a detailed commentary on every difference so that you can grasp completely just what the new code means.

Order it today

The Uniform Code of Military Justice

By Col. Frederick B. Wiener
$3.50

Order from

COMBAT FORCES BOOK SERVICE
1115 Seventeenth Street, N.W. • Washington 6, D. C.

Between 1952 and 1956

BEHIND CLOSED DOORS: The Secret History of the Cold War. By Rear Admiral Ellis M. Zacharias, USN (Ret). G. P. Putnam's Sons. 367 Pages; Index; $3.75.

The chief value of this behind-the-scenes book is the ideas and backgrounds and interpretations it gives of current world history. Ostensibly it gives "inside facts," lifts the "lid of secrecy" which has been "clamped down on the boiling cauldron of international diplomacy."

Most of the sources quoted are travelers, statesmen, diplomats, high-ranking officers and "senior officers of the Red Army and Navy, atomic scientists, outstanding economists, diplomats, and officials from virtually every branch of the Soviet bureaucracy." The approach is that of a book-length newsletter, confidential in tone—and like most newsletters it is compounded of rumor, hearsay, straight stuff, and educated guesses. If you know what the score is on the international scene, you don't need the book. If you are just an average citizen, you don't know what to believe and what to disbelieve.

Like a newsletter, too, it must be read hot off the griddle—or time will date the statements. Korea, for example, is brushed off in passing with a brief mention.

The gist of the author's beliefs is this: "The uncertain days of the precarious peace that we call the cold war are numbered.

"War between the United States and the Union of Soviet Socialist Republics . . . is likely to materialize some time between the summer of 1952 and the fall of 1956.

"War may come in response to a series of aggressive Soviet moves, which the Kremlin will regard as essential to Russian security but to which we shall react violently and with determination.

"Or it may come, as Soviet experts now say it will, as a move of desperation on the part of the United States to stave off an 'inevitable' depression or, better still, to turn depression into prosperity."

The decision to abandon the prolonged shadowboxing of the cold war was reached in the fall of 1948 on the basis of an estimate of the situation prepared "at the specific request of Generalissimo Stalin . . . upon that estimate, the Politburo unanimously agreed, in extraordinary session on January 28, 1949, to accept as immediately valid Lenin's thesis that war between capitalism-imperialism and communism is inevitable. At once they ordered the whole vast Soviet state to gird itself for the showdown between the United States and the USSR.

This book cannot be dismissed lightly, but its statements, interpretations and proposals should not be accepted *in toto*. The high reputation of its authors as intelligent experts must be given acknowledgement—as should the truth that intelligence is one of the trickier aspects of war, and the one most likely to go wrong.—R. G. McC.

Facts on the Soviet Government

SOVIET POLITICS: The Dilemma of Power. By Barrington Moore, Jr. Harvard University Press. 503 Pages; Index; $6.00.

At a time when most of the popular books on communism and the Soviet are written by repentant ex-communists intent on demonstrating how much they've reformed, it is refreshing to find a work that deals with fundamentals and adds to understanding of the Soviet government.

In cutting through the fat and muscle into the heart of the Soviet system, Dr. Moore avoids detailed discussion of such implements of policy as the MVD, the Soviet spy network and Siberian slave camps. Instead he goes to the ideological root of communism, follows it through the many distortions of practice and reconstructs the policies that account for the behavior of the Soviet government today. To do this he presents the evidence to the reader and then offers his own interpretation. He declares at the outset that he has no intention of arguing the relative merits of the Russian and western systems of government, and nowhere does emotionalism color the presentation of his facts. The book is intended to inform, and without aid of anecdote or literary embellishment it accomplishes its mission.

The stated purpose of the book is to determine "which of the prerevolutionary Bolshevik ideas have been put into effect in the Soviet Union, which ones set aside, and why." Beyond this lies a broader question: "What is the role of ideas in action, particularly political action?" Dr. Moore finds many answers by tracing communism from prerevolutionary Leninist theory and practice, through the Trotsky-Bukharin-Stalin struggle for power and the development of Stalinism. The result is a crazy-quilt pattern of contradiction in doctrine, repudiation of principles, compromise with capitalism and return to Leninist and even Trotskyist theories—all under the common pressure of expediency.

Marx found an economic root to all major social change, and it is accordingly

THE Lorraine Campaign

The first of a nine-volume series of World War II in Europe

By HUGH M. COLE, Office of the Chief of Military History, Department of the Army

The complete, official history of the operations of General George S. Patton's Third Army in the fall of 1944 against the German forces defending the territory between the Moselle River and the Siegfried Line, based on both American and German records.

You get the full story of the massive assaults on the fortress of Metz, the Maginot Line, the Siegfried Line, against an enemy whose tenacity increased with each American advance on German soil.

This comprehensive history gives the complete story including the background of the campaign, strategy, tactics, conclusions and results—plus incidents and episodes that vividly show the battles from the soldier's point of view.

$10.00

Other Combat volumes of the Official History of World War II

Okinawa:
***The Last Battle*.....$7.50**

Guadalcanal:
***The First Offensive*..$4.00**

Order from

U. S. Army
COMBAT FORCES
BOOK SERVICE
1115 17th St., N.W. Washington 6, D. C.

"Indispensable"*

for every combat soldier, sailor and marine

HISTORY OF UNITED STATES NAVAL OPERATIONS IN WORLD WAR II

by SAMUEL ELIOT MORISON

Authoritative, stirring, detailed, fully illustrated—"One of the greatest battle histories of literature."

—HENRY STEELE COMMAGER

NEW—Published Nov. 13

BREAKING THE BISMARCKS BARRIER
March 1943–June 1944 (Vol. 6)

Includes the Bougainville operation, the Battle of Empress Augusta Bay, carrier strikes on Rabaul, the Battle of the Perimeter and Cape St. George, etc.

THE STRUGGLE FOR GUADALCANAL
August 1942–February 1943 (Vol. 5)

"One of the great studies and great stories of the second World War."

—WALTER MILLIS

CORAL SEA, MIDWAY AND SUBMARINE ACTIONS
May 1942–August 1942 (Vol. 4)

"Has all the sinewy virtues of its predecessors."
—N.Y. Herald Tribune

THE RISING SUN IN THE PACIFIC
1931–April 1942 (Vol. 3)

Describes the "incidents" that really began the war in the Pacific, a brilliant account of what actually happened at Pearl Harbor, concludes with the Halsey-Doolittle raid on Tokyo.

OPERATIONS IN NORTH AFRICAN WATERS
October 1942–May 1943 (Vol. 2)

A full record of "Operation Torch," at its time one of the largest overseas expeditions ever undertaken.

THE BATTLE OF THE ATLANTIC
September 1939–May 1943 (Vol. 1)

Deals with the defense of our own ships and shores, convoys and the war on the U-boats.

Each volume fully illustrated with Photographs and Maps.
Jackets in Full Color by Dwight Shepler.

PRICE PER VOLUME $6.00 **New York Times Book Review*

U. S. ARMY **COMBAT FORCES Book Service**
1115 Seventeenth Street, N.W. Washington 6, D. C.

interesting to note the fate of one of the great principles of communism—elimination of the profit motive. The Bolshevik program aimed at removing capital profit by public ownership of industry and individual profit by the equalization of wages. Both policies took a beating in practice, and the second has been eliminated, apparently for good, from the Soviet program.

State-owned industries, often under inexpert political direction, had to contend with private production during the early days of communization. Despite considerable help from the government, these "people's factories" often found themselves unable to compete with the private plants, particularly for pay and working conditions. Workers tended to drift toward the private factories.

By 1921, Lenin successfully promoted the New Economic Policy, designed to overcome obvious shortcomings of the communist theory in practice. This program admitted at least temporary defeat for the Marxian principle "From each according to his abilities, to each according to his *needs*." For it permitted farmers to sell in the open market all produce left after the state had gotten its allotment.

This was a temporary expedient, but it was symptomatic of a weakness that was to develop into a new Stalinist policy under the slogan "From each according to his abilities, to each according to his *labor*." Under this theory, which helped officially to demolish the equalitarian principles of Marx and Lenin, individual competition was to be based on incentive rewards—in other words, profit.

Thus the basic motivation of capitalism has been affirmed in Soviet Russia. Dr. Moore points out that many original Leninist goals which had been abandoned have been revived, and perhaps equality of reward will be one of them. But it is, at the moment, significant that this particular communist principle has had to be set aside.

The development of Stalinism is probably most clearly defined in Soviet foreign policy. Lenin and Trotsky stressed world revolution, but Stalin came to realize that immediate destruction of capitalism abroad was impossible. The revolutions of the 1920s in Germany and China had failed to create communist rule in those countries, and Stalin therefore turned to the principles of "socialism in one country." As time passed, it was necessary for Stalin to promote the doctrine of co-existence of capitalist and communist states—a conciliation which led many western statesmen to hope for lasting peace with Russia.

But this policy was apparently just a temporary concession to necessity. Under it, the Soviet Union was able to ally herself in peace with Nazi Germany and in war with the Western allies. But as early as 1944, Stalin's speeches indicated a return to the old warfare with capitalism and the further development of Russia as an imperialistic state.

Dr. Moore, who is fluent in Russian, relies largely on Soviet records for his material. He charts the course of Soviet policy over three decades by studying reports of party congresses, speeches of Soviet leaders and the propaganda line of the Soviet press. He also compares notes with other authorities on the Soviet Union and adds his own carefully weighed evaluation of the facts.

The result is a tightly written, well organized and absorbing study of the Soviet Union.—BROOKS MCCLURE.

Boswell of the Infantry

THE STORY OF ERNIE PYLE. By Lee G. Miller. The Viking Press. 428 Pages; Index; $3.95.

Though he was perhaps the last to realize it, if he ever did, Ernie Pyle was the one correspondent of World War II who is likely to be remembered. His columns were avidly devoured by people in all walks of life. President Roosevelt read them regularly; Eisenhower, Bradley and other military leaders were among his most ardent admirers; fellow correspondents likewise acclaimed him. However, it was among the GIs, their families and friends that Ernie Pyle gained his staunchest support. As the "Boswell of the Infantry" Ernie succeeded in describing war in the intimate, lonely, dirty and frightening terms our soldiers came to know.

Those who have hailed his magnificent reporting, will enjoy *The Story of Ernie Pyle*. The author, Lee Miller, was Ernie's editor, friend and business manager. Consequently, he was in a unique position to prepare this biography. By combining much of Ernie's personal correspondence with the myriad of business and family details which he handled, Miller has painted a thoroughly excellent portrait of Pyle. As you read *The Story of Ernie Pyle* you can understand and appreciate the really fine writing which Ernie accomplished.

To the millions of Ernie Pyle admirers, this book will be a nostalgic and sentimental experience. Miller's style and presentation of this material are tailored to his subject. *The Story of Ernie Pyle* belongs on every bookshelf right beside *Home Country, Here is Your War,* and *Brave Men*.—R. F. C.

Report on Germany

THIS IS GERMANY: A SPECIALLY PREPARED REPORT ON POSTWAR GERMANY BY THE TOP CORRESPONDENTS ON THE SPOT. With a preface by General Lucius D. Clay. Edited by Arthur Settel. William Sloane Associates, Inc. 429 Pages; $4.00.

Under the editorship of an enlightened public relations officer, twenty-one leading correspondents in Germany have united in a new type of symposium. The idea is to present a detailed picture of Germany today. This gives it much more variety than the one-man (or woman) books which have deluged and puzzled readers during the past years. But the effect, like the company, is somewhat mixed. Some of the authors went in for essays assembling a wealth of hard-to-get information. For example, Richard Lowenthal gives an excellent and balanced account of current German political groups and trends. From complementary angles two other authors, Ernest Leiser and Dennis Martin, approach the difficult problem of the nine million refugees in a total population of forty-eight million West Germans. Judy Barden starts sensationally but goes on to deal competently with the problems of a society whose morals have been thrown out of joint. Some of the other major issues, (the "Guilt Question," denazification, education, the "small" or "common" man) have been tackled not by one author, but half a dozen, and thoroughly by none. The economic aspect of Germany receives no real elucidation. Terence Potters writes on "The Ruhr" in rambling and unenlightening fashion. There is one good study on the deeper psychological implications of the occupation, by Petr de Mendelsohn, two on the relations of Germany's neighbors, particularly France, and one long and competent study on the Soviet Zone. The "Case History of a German Town" is an amusing skit.—HERBERT ROSINSKI.

Japan and China

THE UNITED STATES AND JAPAN. By Edwin O. Reischauer. Harvard University Press. 357 Pages; Maps; Index; $4.00.

THE GOVERNMENT AND POLITICS OF CHINA. By Ch'ien Tuan-sheng. Harvard University Press. 526 Pages; Index; $7.50.

If, as hindsight now points out, we had made serious attempts to understand China and Japan before the war, there probably would have been no Japanese end to the Axis, no Mao, no Red

WALK With the DEVIL

By

ELLIOTT ARNOLD

A swift-paced, intensely human novel set in an Italian village in the Apennines during the war. The essential conflict rests between Guy Bertini, Italian-American, who is fighting with the American troops, and his brother Bartolomeo, former gangster—deported to Italy before the war and now on the side of the Axis.

***Walk with the Devil* is Elliott Arnold's finest novel, and its power comes not only from the mature wisdom with which he traces the interrelationships of the main characters, but also from his climax, which will challenge the moral conscience of every reader.**

$3.00

ILL MET BY MOONLIGHT

By W. Stanley Moss

On April 26, 1944 Major-General Karl Kreipe, commanding the German forces on Crete, left his headquarters for his villa a short distance away. But the General never arrived. Instead he rode in his staff car past twenty-four of his military posts—taking full salutes from the guards—with a British officer's gun pressed in his side.

***Ill Met by Moonlight* is the British officer's story, simply told, of one of the most brilliantly planned and executed forays of World War II. Here is fact infinitely more dramatic than fiction.**

$2.50

Order from

U. S. Army
COMBAT FORCES
BOOK SERVICE

OUR

Jungle Road

TO TOKYO

By Lieutenant General

ROBERT L. EICHELBERGER

"No army of this war has achieved greater glory and distinction than the Eighth."
—Gen. Douglas MacArthur

General Eichelberger, commander of the Eighth Army—a top military strategist who also saw front-line action—tells the moving story of the army's ground war in the Pacific.

He shows you what it was like for a general to go patrolling with a tommy gun; to work with a man of the brilliance—and the personality—of MacArthur; to command an army which set an all-time record for swift amphibious movement. He throws light on the complicated problems of inter-Allied and inter-service cooperation, and explains the decision to attack the Philippines instead of by-passing them.

Here you will see that the Pacific War was not just a series of sea and air battles and amphibious Marine actions, *but was predominantly the Army's war.*

$4.50

Order from

U. S. Army
COMBAT FORCES
BOOK SERVICE
1115 17th St., N.W. Washington 6, D. C.

China, and no Korean "incident." Despite the fact that nobody, not even the learned columnists in the papers nor the most astute intelligence analyst, knows for sure what the future holds, these books are worth reading. If the Oriental cauldron continues to boil, they will be well worth reading; and if it boils over they will be "must" reading.

Reischauer's book on Japan gives the responsible citizen all the facts he needs to know about Japan's past relations with the Western world, her geographical setting, her economy, the character of her people, and up to the middle of 1950 at least, what the occupation means to her and to America.

The United States, to put it bluntly, is out on a limb as far as Japan is concerned. The occupation has just about served its purpose, but how are we going to end it without making a peace treaty, and how are we going to make a peace treaty acceptable to us when Russia will have an important say-so in its making? While suggesting that we should make a separate peace with Japan, without regard for our World War II allies, Mr. Reischauer offers no real solution to this vexing problem—about the only time he is at a loss for a sane, stimulating answer to the Japanese problems. Reischauer's book is at once broad in scope and convincing in detail. Of specific interest to the military reader is this passage from the book:

"We should not forget, however, that no matter how feasible it would be to make Japan our military ally, it probably could not be done without seriously endangering Japanese democracy. In view of Japan's militaristic tradition and the record of recent history in which the Japanese Army played the leading role in scuttling the young and still very imperfect democratic institutions of prewar Japan, it would be too much to hope that Japan could be both a military and an ideological ally. As the former she might render the United States valuable aid, if war were to come in the next few years, but she would unquestionably render a greater disservice by driving the rest of Asia away from us and presumably into the other camp. As an ideological ally, she could be of inestimable value in strengthening the cause of democracy throughout Asia. The choice to any but the narrowest of military minds should be an obvious one."

A book on the government and politics of China, written before Mao and the Communists took over, would seem to have little value to the reader seeking information of the current situation in China. That opinion would immediately betray a vast ignorance of the government and politics of China. The origins of the Communist and Kuomintang regimes are intimately related. It is obvious that the failings of the Chiang government define the tasks of the Communist regime in the next stage of the vast Chinese revolution started by Sun Yat-sen early in this century.

Dr. Ch'ien has masterfully presented a well informed, coldly analytical account of the whole tragedy of the Chinese Republic—its abortive effort to establish parliamentary democracy on the ruins of the Chinese Empire in 1912, its collapse into warlordism, its rejuvenation in the 1920s when the Nationalist drive toward unification adopted Soviet methods, its gradual debilitation and decline during the long years of Japanese aggression. There is an acute analysis of the tripartite mechanism of Party, Government, and Army which made Kuomintang China so difficult to understand.—R. G. McC.

Novel of a Sick Nation

WINTERTIME. By Jan Valtin. Rinehart & Company. 439 Pages; $3.50.

Wintertime is the story of Martin Helm, a German, and his efforts to build something approaching a normal life for himself in today's Germany, where the only normalcy is the abnormal.

Martin Helm had been a merchant ship captain, had scuttled his ship and been made a prisoner of war in a Texas camp. The Germany he returned to in 1946 was a nation sick with horror piled upon horror, sick with destruction and defeat, bitterly playing conqueror against conqueror—Soviet against America.

Martin Helm's battle to remain his own man, to resist nearly overwhelming temptations to become somebody's pawn —American, Communist, black market, terrorist—is the meat of the book.

As a novel, *Wintertime* is spasmodic, badly constructed. Its characters too often are wooden. Yet a few names round out to become people—Helm himself; Wetterman, the frighteningly patient, efficient Communist to whom neither time nor human life nor anything but the eventual triumph of Communism has meaning.

Yet for all its weaknesses, *Wintertime* is a book of great power. It is a revelation of the sick soul of a nation to which we are committed to bring democracy as we understand it. If we do not succeed, we shall probably lose Europe, for Germany, beaten and trampled though she may be, is still the key to Europe. *Wintertime* is a picture of

Napoleon's *MEMOIRS*

The Emperor's own account of his fabulous career, now available in America for the first time

Edited by Somerset de Chair

Napoleon Bonaparte's own account of his fabulous career as soldier and statesman is a historical autobiography of the first importance. For its own period, it is comparable to the memoirs of Winston Churchill and Dwight Eisenhower.

During his exile on St. Helena, Napoleon dictated his memoirs at random to four members of his personal staff. After his death, the parts recorded by each of his aides were published in separate volumes, and the result was a haphazard collection of almost unintelligible notes. This precious raw material has now been assembled in its proper order, condensed to eliminate overlappings and edited for the modern reader.

It covers Napoleon's early life, the French Revolution, his rise from lieutenant to First Consul of France, and his military triumphs through the Battle of Marengo. Part II of this volume is a detailed account of the return from Elba, the bloodless seizure of the French throne, and the tragic campaign of Waterloo.

Invaluable for anyone with a serious interest in military history.

$7.50

Order from

U. S. Army
COMBAT FORCES
BOOK SERVICE
Washington 6, D. C.

what we face, and the picture is one of bitterness and misery, relieved only by the will to integrity of Germany's Martin Helms.—O. C. S.

The Real India

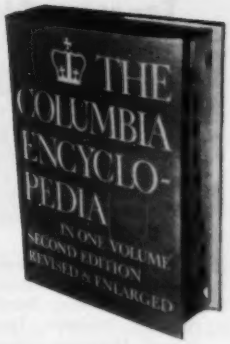
INTERVIEW WITH INDIA. By John Frederick Muehl. The John Day Company. 310 Pages; Glossary; $3.50.

Few books published during these last years equal this fascinating account of a trip through the western half of India, either for color or for political interest. Even as a tale of adventure it keeps the reader spellbound from the first page to the last. It is the story of a trip few Westerners have ever undertaken, skirting the great cities and the beaten paths and penetrating right into the heart of the countryside by every primitive means of transportation available, on foot or horseback, by boat, in bullock carts, or riding pillion on a camel.

Starting on the west coast the author crossed with a struggle the dreaded Rann of Cutch, part salt lake, part desert, and lived for weeks in a smugglers' village on its border. Then having to leave one night, because his life was in danger, he linked up with an equally enterprising and amusing Indian policeman on the chase after a notorious outlaw, passed on to join a caravan of players and dancers touring the towns and villages of Bombay Province, walked with two guides through the snake-infested jungle forests of Mysore, followed the coast line south in a native sailing boat; then traveling northward again crossed South India, seething with agrarian unrest, in a bullock cart, until he was forced to give up by a heat stroke.

Yet the human interest of this tale is enveloped in and surpassed by its political significance. No other book on India brings home so strikingly the truth, so often glibly asserted, that whatever the distant government in Delhi may plan or decree, the life of India is still in its villages, where the arm of the government, for good or evil, fails to penetrate. As a detailed, microscopic analysis of the varying pattern of Indian village life in a number of the most important areas, this book is unique. Against a background of almost unbelievable squalor, hunger and disease, it is the story of a gigantic system of oppression. The pattern varies from the decaying Rajput system in the Northwest with its remnants of a more responsible outlook, to the brutal assertion of the reactionary elements in the Bombay district, and the complete subjugation of the mass of the peoples in the South. But, everywhere

YOU NEED THIS BOOK



NEVER BEFORE has so *much* information on so *many* subjects been brought together in a single volume!

This *NEW*, revised edition of *The Columbia Encyclopedia* is the best handy reference one-volume encyclopedia ever printed. Ideal for writers, researchers and students, it is also valuable for the general reader who wants basic information on a wide variety of subjects. It is written simply and clearly and contains a close-knit system of cross references to guide the reader to all related subjects. Included also is a new, up-to-date list of books for further reading on all major articles.

Every article has been reviewed, and if necessary revised or rewritten, in the light of the latest available information. And many new articles have been added to bring it completely up to date.

If you order before midnight November 19 you can get this $25.00 book for only $22.50.

6,000,000 words
2,300 pages
75,000 cross references
Over 70,000 articles
thumb-indexed
Ready November 20

ORDER NOW FOR $22.50

Order from

U. S. Army
COMBAT FORCES
BOOK SERVICE
Washington 6, D. C.

Truman, Stalin and Peace

By Albert Z. Carr

A fresh and long-range view of the cold war—drawn from hitherto undisclosed facts.

How the crisis developed—the historic roles played by Roosevelt, Truman, Churchill, Stalin, Byrnes, Marshall, Acheson, Molotov, Donald Nelson, Averell Harriman, Chiang Kai-shek, MacArthur, Clay and others.

Facts on recent American statesmanship—and the men responsible for its virtues and shortcomings. The real reasons for our failure in China—the dangerous flaw in the Marshall Plan—the startling emergence of Germany as the true winner of the cold war—the reasons for our intervention in Korea.

How we should work toward peace—what the nation should do—what you should do.

$2.75

●

All Honorable Men

By James Stewart Martin

After the war the Decartelization Branch of our Military Government was set up; its object was to help win the peace by smashing the German cartel system. But in a short time the program was frustrated and was finally stopped by powerful opposition.

James Stewart Martin, former Chief of the Decartelization Branch, tells of the many obstacles in the mission's path and what happened to alter the original clear-cut plan. He names all the major individuals and firms involved, and describes incidents of how we actually aided the enemy in wartime under the provisions of ordinary commercial agreements.

This is the inside story of what happened when the interests of businessmen conflicted with U. S. war aims.

$3.50

Order from

U. S. Army
COMBAT FORCES
BOOK SERVICE
1115 17th St., N.W. Washington 6, D. C.

with the sole exception of the Kanarese fishermen on the west coast, there is essentially the same suppression of the lower orders, the working castes and the ever more unfortunate untouchables, by the landowners, the Brahmans and above all, the ubiquitous merchants and moneylenders, the Banias. Behind them all stands the power of the great, reactionary organization, the RSS which all through the country the author found training its shock troops, and out of which sprang the conspiracy that murdered Gandhi.

It was an unpremeditated and yet deeply significant turn of his story that it ended with the revolt against this abuse: the great strokes in which tenant cooperatives and communists jointly worked the extortionate landlord system in South India. Muehl's interview with the blind communist leader, Arunapillai, who under the nose of the Government had built up one of a number of communist-dominated districts, ready to take over openly as soon as the Government's power waned, is a fitting conclusion to his inquiry into the bases of Indian society and civilization.—HERBERT ROSINSKI.

Brief Reviews

FLOWERS: A GUIDE TO FAMILIAR AMERICAN WILD FLOWERS. By Herbert S. Zim and Alexander C. Martin; Illustrated by Rudolph Freund. Simon & Schuster. 157 Pages; Index; $1.00.

THE NEW FEDERALIST. By Publius II—Justice J. Roberts, John Schmidt and Clarence K. Streit. Harper & Brothers. 109 Pages; $1.50. A presentation of the basic principles of federalism applicable between nations.

You can get the famous *ZIPPO* Lighter with YOUR INSIGNIA

The best cigarette lighter you can buy. The Zippo will light every time, even in a strong wind. It is personalized with the insignia of your branch and —if you like—with your division insignia, too.

AN IDEAL GIFT

Windproof
Polished steel case
Branch Insignia &
Division Insignia
in official color—
gold trimmed

Only $3.50
(with one insignia)

$4.25 with two insignia

Special discounts to units on orders of 25 or more. Please write for details.

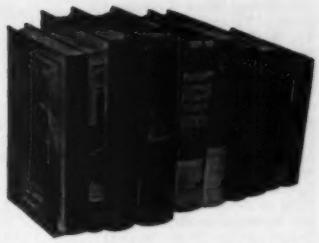
Order from

COMBAT FORCES JOURNAL
1115 17th St., N.W.
Washington 6, D. C.

THE COMBAT FORCES BOOK SERVICE

1115 SEVENTEENTH STREET, N.W. **WASHINGTON 6, D. C.**

The books listed here are available for prompt shipment



NEW BOOKS THIS MONTH

All Honorable Men (Martin) $3.50
Best Army Short Stories of 1950 .. 2.50
Hinge of Fate (Churchill) 5.00
How to Survive the Atomic Bomb (Gerstell) 1.95
Life's Picture History of World War II 10.00
MacArthur: Man of Action (Kelley & Ryan) 3.00
Napoleon's Memoirs (de Chair) ... 7.50
Our Jungle Road to Tokyo (Eichelberger) 4.50
Truman, Stalin and Peace (Carr) .. 2.75
Uniform Code of Military Justice (Wiener) 3.50
Walk with the Devil (Arnold) ... 3.00

TRAINING

The finest training aid ever devised

Notes for Troop Instructors
(on cards)

Combat Formations $1.00
Elementary Map Reading 1.00
First Aid 1.00
Carbine, M-2, Mechanical Training 1.25
Rifle, M-1, Mechanical Training 1.75
2.36" Rocket Launcher 1.25

Drill and Command—IDR; paper 1.00; cloth 2.50
Combat Problems for Small Units 1.00
Driver Training ..... .25
Engineer Training Notebook ..... .50
Guerrilla Warfare (Levy) ..... .25
Keep 'em Rolling (motor transport) .... .50
Map and Air Photo Reading 1.50
Map Reading for the Soldier 1.00
Ordnance Field Guide (restricted) Vols. I, II, III ..... each 3.75
Scouting and Patrolling ..... .25

RUSSIA: HER POWER AND PLANS

Soviet Arms & Soviet Power
By General Augustin Guillaume

How the huge Russian Army was built and its relation to the politico-economic structure of modern Russia. **$3.50**

Coming Defeat of Communism 3.50
Soviet Arms & Soviet Power (Guillaume) 3.50
Communism: Its Plans and Tactics 2.00
If You Were Born in Russia 5.00
Berlin Command (Howley) 3.50
Capital (Karl Marx) 1.25
The Curtain Isn't Iron 2.00
Decision in Germany (Clay) 4.50
Development of Soviet Economic System. 6.00
Economic Geography of the USSR 10.00
How to Win an Argument with a Communist (Sherman) 2.50
March of Muscovy (Lamb) 3.75
Maritime History of Russia 5.00
Natural Regions of the USSR 10.00
Out of the Crocodile's Mouth 2.50
The Real Soviet Russia (Dallin) 3.50
Red Army Today (Ely) 3.50
Roosevelt and the Russians (Stettinius) .. 4.00
Russia and the Russians (Crankshaw) 3.00
Soviet Air Force 2.75
Soviet Politics (Moore) 6.00
Stalingrad 3.00
Strange Alliance (top command in Russia —Gen. Deane) 3.75
Ten Days That Shook the World 1.25
Tito & Goliath (Hamilton) 2.50
World Communism Today (Eben) 5.00

ATOMIC WEAPONS AND GUIDED MISSILES

Atomic Energy Report (Smyth) ..... .49
Guided Missiles ..... cloth 2.00; paper 1.00

The Effects of Atomic Weapons
$3.00

The Hell Bomb (Laurence) 3.00
Modern Arms and Free Men (Bush) 3.50
No Place to Hide (Bikini—Bradley) paper .25; cloth 2.00
Nucleonics (simple atom explanation) .. 1.00
Our Atomic World ..... .50
Reducing Vulnerability to Atomic Bomb .. 2.00
International Control of Atomic Energy .. .35

INTELLIGENCE, PSYCHOLOGICAL WARFARE, SPIES

Psychological Warfare (Linebarger) 3.50
Front-Line Intelligence 2.50
Abraham Lincoln and the Fifth Column ..... paper .25
Combat Intelligence (Schwien) 2.00
Cryptography 3.00
Intelligence is for Commanders 3.85
Modern Criminal Investigation 3.50
The Plotters 3.50
Public Opinion and Propaganda (Doob) . 5.00
Secret Missions (Zacharias) 3.75
Strategic Intelligence (Kent) 3.00
Under Cover 1.49

BEST SELLERS

Across the River & Into the Trees (Hemingway) 3.00
Behind Closed Doors (Zacharias) 3.75
The Spanish Gardener (Cronin) 3.00
Eleanor of Aquitaine and the Four Kings. 5.00
The Grand Alliance (Churchill) 6.00
John Adams and the American Revolution (Bowen) 5.00

ORDER FORM

COMBAT FORCES BOOK SERVICE

1115 Seventeenth Street, N.W., Washington 6, D. C.

Please send the following books:

☐ I enclose *$---------- *(Residents of the District of Columbia please add 2% for sales tax)*

☐ Send C.O.D.

☐ Send bill to Company Fund ----------
Name (Please print)

☐ Please charge to my account.

Name (Please print)

(Address or box number)

(Town or APO) (Postal Zone) (State)

*BOOK DIVIDEND COUPONS: If you remit with this order, we will include with your shipment a bonus of TEN PER CENT of the cash remitted in Combat Forces Book Dividend Coupons, which can be used to purchase more books any time in the future. (Coupons cannot be given on official government manuals, or on orders for organizations.)

(PL1150)

The Mature Mind (Overstreet) 2.95
Seeds of Treason (de Taledano & Lasky) . 3.50
The Wall (Hersey) 4.00
Way West (Guthrie) 3.50
Worlds in Collision (Velikovsky) 4.50

RECENT FICTION

Broncho Apache (Wellman) 3.00
Command Decision (Haines) 2.50
Day Without End (Van Van Praag) 3.00
Follow the Seventh Man (Standish) 3.00
Guard of Honor (Cozzens) 3.50
King of Fassarai (Divine) 3.00
Mr. Midshipman Hornblower 3.00
Naked and the Dead (Mailer) 4.00
Phantom Fortress (Lancaster) 3.00
The Plymouth Adventure (Gebler) 3.00
Rage to Live (O'Hara) 3.75
Secret (Amrine) 3.00
Son of a Hundred Kings (Costain) 3.00
Stubborn Heart 3.00
Top of the World (Ruesch) 2.75
Verdict in Dispute (Lustgarten) 2.50
Wintertime (Valtin) 3.50
Wonder of All the Gay World (Barke) .. 3.50
Young Emperor (Payne) 3.50

RECENT NONFICTION

Air Power: Key to Survival (de Seversky) paper 1.00; cloth 3.50
Air Power & Unification (Sigaud) 2.50
Alaska Now (Hilscher) 3.00
Armament and History (Fuller) 2.50
The Ramparts We Guard (MacIver) 3.00
Elephant Bill (Williams) 3.00
Escape to Adventure (Maclean) 4.00
Faith is Power for You (Poling) 2.50
Fifteen Decisive Battles (Creasy) ..... .95
Human Use of Human Beings (Wiener) . 3.00
I Chose Freedom (Kravchenko) 3.50
I Chose Justice (Kravchenko) 3.75
Illustrations from the Works of Andreas Vesalius 10.00
Fireside Cook Book 5.00
Korea Today (McCune) 3.50
The Last Cruise (Lederer) 1.50
Long the Imperial Way (Tasaki) 3.50
Modern Parables (Oursler) 1.75
Nelson the Sailor (Grenfell) 3.00
Ordeal by Slander (Lattimore) 2.75
Peace of Mind (Liebman) 2.50
Peace of Soul (Sheen) 3.00
Roof of the World (de Riencourt) 3.50
Sergeant Shakespeare (Cooper) 2.50
Sewing Made Easy 3.95
Story of Maps 7.50
Ten Days to Die (Musmanno) 3.50
Tito and Goliath (Armstrong) 2.50
War or Peace (Dulles) ..... cloth 2.50
paper 1.00
Why I Know there is a God (Oursler) .. 2.00

GREAT MODERN LEADERS

Eisenhower—Crusade in Europe 2.95
Eisenhower—My Three Years With (Comdr. Butcher) 2.00
Eisenhower: Soldier of Democracy (Davis) 1.00
Geo. C. Marshall—Reports (1939-43) .. 1.50
Geo. C. Marshall—Public Statements; paper .25; cloth 2.75
Map Supplement 1.25
Marshall, King, Arnold—War Reports... 7.50
Patton—War As I Knew It 4.00
Stilwell—Stilwell Papers 4.00
Churchill—Gathering Storm 6.00
Churchill—Their Finest Hour 6.00
Churchill—The Grand Alliance 6.00
Churchill—Roving Commission 3.50
General H. M. Smith—Coral and Brass.. 3.00
Montgomery—El Alamein to River Sangro 6.50
Great Soldiers WW II—Marshall, Stalin, etc. 3.75
Montgomery (Moorehead) 4.00
McNair—Educator of an Army 2.00
Patton and His Third Army (Wallace) .. 3.50
Chennault—Way of a Fighter 4.50

GREAT LEADERS OF OLD

Captain Sam Grant (Lewis) 6.00
The Emergence of Lincoln (Nevins) 2 vols. 12.50
Lincoln Encyclopedia 6.50
Lincoln Finds a General (Williams) 2 vols. ..... set 12.50
Eleven Generals—Greene, Sheridan, Bradley, etc. 5.00
Alexander of Macedon (Harold Lamb).. 3.50
Washington, Gen'l George (Writings).. 4.50
Sherman—Fighting Prophet (Lewis) 5.00
Washington, The Young (Freeman) 2 vols. ..... set 15.00
General Bedford Forrest (Lytle) 4.00
Great Soldiers of WW I (De Weerd)... .25
Pershing, Gen. John J. (Col. Palmer).... 2.00
Napoleon (Ludwig) 1.25
Stonewall Jackson (Henderson) 6.00

LEADERSHIP PRINCIPLES

Men Against Fire—Combat Morale (Col. S. L. A. Marshall) 2.75
All But Me and Thee (Non-Battle Casualties) **2.75**
Psychology For the Armed Services 4.00
Americans vs. Germans (Battle Leadership) .25
Command at Sea (Cope) 2.75
Company Commander (MacDonald) 3.00
Leadership (Gen. Munson) ..... .25
Managing Men (for Noncoms) 2.00
Management and Morale (Roethlisberger) 3.00
Psychology for the Fighting Man—paper .25
cloth 1.50
Red Badge of Courage (Combat Panic).. 1.25
Reveries on Art of War (Marshal Saxe).. 1.50
The American Soldier
Vol. I: Adjustment During Army Life. 7.50
Vol. II: Combat and its Aftermath 7.50
Vols. I and II together 13.50
Vol. III: Experiments on Mass Communications 5.00
Vol. IV: Measurement & Prediction.... 10.00

BOOKS FOR THE STAFF OFFICER

National Security and the Gen. Staff (History, U.S. Staff) 5.00
American Military Government (Holborn) 3.50
Caesar's Gallic Campaigns 2.50
German Army (and General Staff) (Rosinski) 3.00
Lawful Action State Military Forces 3.00
Military Staff (History and Development) 3.00
Organization & Equipment for War 1.75
Overture to Overlord (Morgan) 3.50
Practical Manual of Martial Law (Wiener) 2.50
Riot Control (Col. Wood) 2.50
SOP for Regimental Adjutant ..... .10

GROUND COMBAT
(See Also Unit Histories)

Airborne Warfare (Gen. Gavin) **3.00**
Assault, The (Matthews) 2.50
Bacteriological Warfare (Jnl of Immunology) 1.00
Battle is the Payoff (Col. Ingersoll) ..... .25
Battle Studies (DuPicq) 2.50
Brave Men (Ernie Pyle) ..... .98
Dunkirk 4.50
Engineers in Battle (Thompson) 2.00
Fight at Pearl Harbor (Clark) ..... .25
Guadalcanal Diary (Tregaskis) ..... .25
Infantry in Battle 3.00
Iwo Jima; paper ..... .25
The Gun (C. S. Forester) ..... .25
The Lost Battalion (Johnson and Pratt).. .25
175 Battles (Shaw & Vestal) 2.50
Rifleman Dodd (C. S. Forester) ..... .25
Tank Fighter Team (Armored combat) paper ..... .25

SEA COMBAT

Battle Report (Capt. Karig)
I Pearl Harbor to Coral Sea 3.50
II (Atlantic War) 3.50
III (Middle Phase) 5.00
IV (End of Empire) 5.00
V (Victory in the Pacific) 5.00
History of U.S. Naval Operations (Morrison)
Battle of the Atlantic, Vol. I 6.00
Operation in North African Waters, Vol. II 6.00
Rising Sun in the Pacific, Vol. III 6.00
Coral Sea, Midway and Submarine Actions, Vol. IV 6.00
Struggle for Guadalcanal, Vol. V 6.00
No Banners No Bugles 4.00
They Were Expendable (PT boats) paper .25
cloth 2.00

STRATEGY

Strategic Air Power (Possony) 5.00
On War (Clausewitz) 3.50
German Generals Talk (Hart) 4.00
Hitler and His Admirals 4.00
Disaster Through Air Power 2.00
Douhet and Aerial Warfare 1.75
Living Thoughts of Clausewitz ..... .25
Admiral Mahan On Sea Power 3.50
Makers of Modern Strategy 5.00
Overture to Overlord (Morgan) 3.50
Sea Power in Machine Age (Brodie) 3.75
To the Arctic (Mirsky) 5.00
Toward a New Order of Sea Power (Sprout) 3.75
War in Three Dimensions 2.50

SUPPLY, PROCUREMENT AND LOGISTICS

48 Million Tons to Eisenhower; paper .25
cloth 2.00

ADMINISTRATION, COURTS-MARTIAL, ETC.

Manual for Courts-Martial, 1949, Air-Army 1.65
New Articles of War (Wiener) 1.00
Advances in Military Medicine, 2 vols.... 12.50
Army Officer's Promotion Guide 1.00
Company Administration; paper 2.50
Group Feeding 5.00
Handbook for Nurses Aides 2.50
Preventive Maintenance 1.00

Uniform Code of Military Justice
$3.50

THE U. S. AND THE WORLD

Administration of American Foreign Affairs (McCamy) 4.00
Road to Survival (Vogt) 4.00
New Compass of the World 5.50
Danger From the East 3.75
Europe (Alington) 3.75
Hate, Hope & High Explosives (Eliot)... 2.75
International Relations (Strausz-Hupé & Possony) 6.00
Introduction to India (Moraes) 2.00
Japan and the Japanese ..... .25
The Middle East (Ben-Horin) 3.50
Modern Arms & Free Men (Bush) 3.50
Our Share of Night (Middleton) 3.75
Revolt in Asia (Payne) 3.50
Time for Decision (Sumner Welles) 3.00
U.S. and Japan (Reischauer) 4.00
Where Are We Heading? (Welles) 3.00

MANUALS

5-230	Topographic Drafting	1.00
14-501	Officers Pay and Allowances...	.45
14-502	EM Pay and Allowances	.60
14-904	Lost and Damaged Property ...	.30
21-11	FM First Aid For Soldiers	.15
21-15	Clothing and Equipment	.20
21-20	Physical Training	1.00
21-25	Elem Map and Aerial Photos...	.20
21-26	Advanced Map & Aerial Photo Reading	.25
21-30	Conventional Signs, Symbols & Abbreviations	.25
21-35	Sketching	.20
21-105	Engineers Soldiers Handbook..	.25
21-510	Army Arithmetic	.20
23-5	U.S. Rifles Cal. .30 M1	.55
23-25	Bayonet Manual	.10
23-40	Thompson SMG Cal. .45	M1928A1 .15
23-55	Browning Machine Gun Cal. .30	.50
25-10	Motor Transport	.30
26-5	Interior Guard Duty	.10
72-20	Jungle Warfare	.25

SPORTING WEAPONS

Boys Books of Rifles (Chapel) 3.50
Cartridges (Identification) 7.50
Commonsense Shotgun Shooting (Haven) 6.00
Comp Guide to Handloading (Sharpe) ... 10.00
Custom Built Rifles 3.85
Duck Guns, Shooting & Decoying 1.50
Experiments of a Handgunner 4.50
Fast and Fancy Revolver Shooting (McGivern) 5.00
Gun Care & Repair (Chapel) 5.00
Gun Collector's Values (Chapel) New edition 6.75
Gun Collecting (Chapel) 3.00
Gun Digest, 1950 edition 2.00
Hatcher's Notebook (Hatcher) 5.00
Hunting Rifle (Whelen) 5.00
Kentucky Rifle (Dillin) 7.50
Modern Gunsmith (Howe) 2 vols. 15.00
Modern Shotgun (Burrard) ..... 3 vol. set 9.00
Muzzle Flashes (Lenz) 7.50
NRA Book of Rifles Vol. II 10.00
NRA Book of Pistols & Revolvers Vol I .. 10.00
(Boxed set of NRA Books, Vol. I and Vol. II) 17.50
Official Gun Book ..... cloth 2.50
paper 1.50
Our Rifles (Sawyer) 5.00
The Peacemaker & Its Rivals (Parsons) .. 4.00
Pistol & Revolver Shooting (Roper) 2.49
Practical Book of American Guns 4.95
Practical Dope on the .22 (Ness) 4.00
Practical Dope on Big Bore (Ness) 5.00
The Rifle Book (O'Connor) 5.95
Rifle in America (Sharpe) 15.00
Rifle for Large Game (Keith) 10.00
Rimfire Rifleman (Brown) 5.00
Shooting Muz. Ldg. Handguns (Haven) .. 4.50
Simplified Pistol & Revolver Shooting ... 4.00
Simplified Rifle Shooting (Chapel) 4.00
Single Shot Rifles (Grant) 5.00
Small Arms of the World (Smith) 6.00
Small Game & Varmint Rifle (Stembers) . 3.75
Whitney Firearms 7.00
Wildcat Cartridges (Simmons) 5.00

MILITARY WEAPONS

Book of the Garand (Hatcher) 6.00
How to Shoot the U.S. Army Rifle ..... .25
How to Shoot the Rifle 1.00
Mannlicher Rifles and Pistols (Smith) ... 5.75
Rifles & Machine Guns ..... .25
Weapons for Future (Johnson-Haven) .. .25
Weapons of World War II (Barnes) 7.50

OUTDOORS, HUNTING, FISHING

Huntin' Gun (Rodgers)

Well-told yarns about instinctive "gun feel" shooting methods in the old Southwest. **$3.50**

Baseball (Coombs) 3.50
Big Game Hunting (Keith) 7.50
Bird Dog Book 4.00
Canvasback on Prairie Marsh 3.00
Crow Shooting 2.75
Dictionary of Baseball with Official Rules 1.50
Ducks, Geese & Swans of North America 4.50
Famous Running Horses 10.00
Field, Skeet and Trap Shooting 5.00
Fishing Tackle Digest 1.50
From out of the Yukon 3.50
Horseman's Handbook on Practical Breeding (Wall) 5.75
How to Live in the Woods (Halsted) ... 2.75
Hunters Encyclopedia 17.50
Hunting American Lions (Hilben) 4.50
Hunting in the Northwest 5.00
Karamojo Safari (Bell) 3.75
Man-Eating Leopard 2.50
My Greatest Day in Golf (Darsie) 3.00
Outdoors Unlimited 3.50
Shotgunning in the Lowlands 5.50
Shotgunning in the Uplands 5.50
The Shotgunners 5.00
Shots at Whitetails (Koller) 5.00
Skeet and How to Shoot It 3.75
Skeet and Trap Shooting (Shaughnessy) .. 3.00
Spinning for American Game Fish (Bates) 4.00
Sports as Taught at West Point 2.50
Taking Larger Trout (Koller) 5.00
Thoroughbred Bloodlines 25.00
Trapping 2.75
Trout and Salmon Fishing 4.50
Voice of the Coyote (Dobie) 4.00
When the Dogs Bark "Treed" 3.00
Whistling Wings 7.50
Wing and Trap Shooting 2.49
Wrestling 1.50

GAMES OF CHANCE

Complete Canasta (Jacoby) 1.75
Cycles: The Science of Prediction 3.50
Gin Rummy (Jacoby) 2.25
How Is Your Bridge Game 2.50
How to Figure the Odds (Jacoby) 2.50
How to Win at Canasta (Jacoby) 1.00
Jacoby on Poker 2.00
Scarne on Cards 3.95
Scarne on Dice 5.00
You Can't Win 2.00

HUMOR

All the Ship's at Sea (Lederer) 3.00
Army Life (E. J. Kahn) paper ..... .25
Army Talk (Colby) 2.00
Campus Zoo (Barnes) 1.00
Home Sweet Zoo 1.00
How to Guess Your Age (Ford) 1.00
Male Call ..... .50
The Marx Brothers (Crichton) 3.00
New Sad Sack ..... .49
People Named Smith (Smith) 2.75
Pocket Book of War Humor ..... .25
Professor Fodorski (Taylor) 2.75
Sad Sack ..... .49
Selected Verse (Ogden Nash) 1.25
Sergeant Terry Bull ..... .25
Thesaurus of Humor ..... .25
White Collar Zoo 1.00

DICTIONARIES, ATLASES, ETC.

American College Dictionary 5.00
with thumb index 6.00
American Everyday Dictionary 1.00
The Army Writer 3.00
Atlas of World Affairs 2.75
Elementary Japanese 1.00
Encyclopedia of Modern World Politics .. 5.00
French Dictionary ..... .50
Goode's School Atlas 5.00
How to Say it in Spanish ..... .75
Information Please Almanac 1950 ..... 2.50
Italian-English Dictionary 1.25
Italian Sentence Book ..... .25
Japanese Handbook ..... .25
The 1950 World Almanac 1.00
The Pacific World ..... .50
Roget's Thesaurus 1.49
Russian Dictionary 1.35
Spanish Dictionary; paper .50; boards ... 1.00
Speech for the Military 2.00
Talking Russian Before You Know It ... 1.75
Webster's Collegiate Dictionary (thumb-indexed) 6.00
Webster's Geographical Dictionary 8.50

NOTEBOOKS AND GUIDES

Army Wife 3.00
Art of Readable Writing (Flesch) 3.00
Business Encyclopedia 1.98
Change Your Career (Panzer) 2.95
Climbing the Executive Ladder (Kienzle) 2.95
Guide to Europe (Newman) 2.95
A Guide to Profitable Investment (Gruver) 2.00
Handbook of Group Discussion 3.75
How to be an Expert Car Buyer 1.00
How to Abandon Ship; paper .25; cloth .. 1.00
How to Get the Job You Want 1.00
How to Run a Meeting 2.50
Mind Your Own Business (Bacon) 2.00
Naval Reserve Guide 2.50
Noncom's Guide 2.50
Officer's Guide 3.50
125 Designs for Convenient Living 1.00
Platoon Record Book ..... .50
Psychology for the Returning Serviceman .25
Soldier (poem—General Lanham) ..... .50
Soldier and the Law (new edition) 3.50
Squad Record Book ..... .25
Standard Primer for Home Builders & Buyers 3.50
The Stevens America 5.00
Your Social Security (Lasser) 1.00

AIR FORCE HANDBOOKS

Celestial Navigation 1.00
Elements of Aeronautics (Pope & Otis) .. 3.75
Flight Principles (Crites) ..... .60
Hydraulic Principles (Etchison) 1.00
Loading & Cruising (Ford) 1.00
Man Behind the Flight (Jordanoff) 3.50
Navigation Principles (Blackburn) 1.75
Of Instruments and Things (Straith) ... .25
Radio Operating (Stone) ..... .60
Radio Principles (Stone) 1.00

MILITARY AND GENERAL HISTORY

Second World War (Gen. Fuller) 3.49
World War II (Shugg and DeWeerd) paper .50; cloth 3.75
A.A.F. History in World War II, Vol. I .. 10.00
A.A.F. History in World War II, Vol. II. 6.00
Air Force Against Japan (Hoagland) ... 5.00
Admirals of Amer Empire (Dewey, etc.) . 4.00
Album of American History (4 vols., index) 35.00
America in Arms (Palmer) ..... .25
American Campaigns, 2 vols. 10.00
American Past (Butterfield) 10.00
American Sea Power Since 1775 ..... 5.00
Annapolis (Puleston) 3.00
An Army in Exile (Anders) 5.00
Beginnings of U.S. Army (Jacobs) 5.00
Celebrated Case of Fitz John Porter (Eisenschiml) 3.50
Crucible (Yay) 3.75

Dark December (Bulge Battle) 3.00
Decline & Fall of Roman Empire (Vols. I, II and III) .....each 2.45
Encyclopaedia World History (Langer) .. 7.50
Flags of America (Col. Waldron) .... .50
Forging Thunderbolt (Armored Force) .. 5.00
Freedom Speaks (Reynolds) 2.00
French Revolution (Carlyle) 2.45
General Kenney Reports 4.50
Heritage of America (Steele-Nevins) 5.00
History of Mod. Amer. Navy (Mitchell) . 4.50
Hitler's Second Army .....cloth 1.00
Impact of War (Herring) 2.50
Island War (Hough) 5.00
Japan's Military Masters .....cloth 2.50
John C. Calhoun (Coit) 5.00
Lincoln Encyclopedia 6.50
March of Muscovy (Lamb) 3.75
Marine Corps Reader (Metcalf) 3.00
Marines War (Fletcher Pratt) 5.00
Meaning of Treason (West) 3.50
Medal of Honor 4.50
Memoirs of Cordell Hull 10.50
Mil. Institutions of Romans (Vegetius) .. 1.50
Modern Battle (Thompson) ..... .25
Mr. Lincoln's Cameraman (Meredith) ... 7.50
Not So Wild a Dream (Sevareid) 3.50
Official History of A.A.F. (McCoy) 10.00
On Active Service (Stimson) 5.00
Operation Victory (deGuingand) 3.75
Potomac (Gutheim) 4.00
Pres. Roosevelt & Coming of War (Beard) 5.00
Private Army (Peniakoff) 4.00
Roosevelt & Hopkins (Sherwood) 6.00
Science at War (Gray) 3.00
Science at War (Crowther & Whiddington) 6.00
Second Navy Reader (Fetridge) 3.75
Short Hist of Army and Navy (Pratt) .... .25
Six Weeks War (Draper) 3.00
Soldier Art ..... .25
Soldiers Album (Dupuy) 2.00
Story of West Point (Dupuy) ..... .25
Tanks (Icks) 4.75
This I Remember (Roosevelt) 4.50
U.S. Army in War & Peace (Spaulding) . 6.00
U.S. Army in World War II
Vol. I: Organization of Ground Combat Troops 3.25
Vol. II: AGF: Procurement and Training of Troops 4.50
Vol. III: Okinawa: The Last Battle... 7.50
Vol. IV: Guadalcanal 4.00
Vol. V: Lorraine Campaign 10.00
War on Wheels (Kutz) 2.00
War Through the Ages (Montross) 5.00
Warfare (Spaulding) 5.00
West Point (Baumer) 3.00
West Point (Crane & Kieley) 7.50
West Point (Forman) 3.75
Western World & Japan 7.50
Winged Mars, Vol. I (Cuneo) 5.00
The Wooden Horse (Williams) 2.75
Yank: GI Story of the War 5.00

EARLY AMERICAN WARS

Ordeal by Fire (Pratt) 5.00
Abe Lincoln and the Fifth Column (Milton) .....paper .25
Conflict (Milton) ..... .25
Gettysburg (Miers & Brown) 3.50
Hood: Cavalier General 4.00
House Divided (Longstreet & Richmond) 5.75
Lee's Lieutenants, 3 vols. (Freeman)...each 7.00
Letters From Lee's Army (Blackford) ... 3.50
Lincoln Finds a General (Williams) 2 vols. .....set 12.50
Lincoln Papers 10.00
R. E. Lee (4 vols.) (Freeman) .....set 25.00
Strategy in Civil War (Deaderick) 2.75
War Years with Jeb Stuart (Blackford) .. 3.50
Patriot Battles (Azoy) ..... .25
Story of the Mexican War (Henry) 4.50
They Were Not Afraid to Die (Azoy) ... 2.00
War of 1812 (Henry Adams) 3.00
I Fought With Custer (Hunt) 3.50
Soldiers in the Philippines (Sexton) .... .25

PRACTICAL SCIENCE

The Second Forty Years (Stieglitz) 3.95
Sex Problems in Modern Society 1.25
Sexual Behavior in Male (Kinsey) 6.50
Animals, Insects, Fishes, Peoples, Plants, Reptiles of Pacific .....each .25
Elements of Radio 4.00
Fund. of Electricity; paper .25; cloth 1.50
Fund. of Mechanics; paper .25; cloth 1.50
Home Repairs Made Easy (Frankl) 6.95
Knots and Rope 1.00
Mathematics for the Million 4.95
Survival; paper .25; cloth 1.50
The Use of Tools 1.00
What to do on a Transport (science) paper .25; cloth 1.50

GUNS, BADGES, BINDERS, ETC.

Combat Infantryman's Badge 2.50
Infantry Journal Binder 2.25
Bull's-eye Indoor Shooting Kit 3.50

UNIT HISTORIES

The Old Breed (McMillan)
The story of the 1st Marine Division—and of the individual Marine, how he fought, how he lived or died, what he thought about.
$6.50

The Admiralties (1st Cav. Div.) ..... .50
Anzio Beachhead (VI Corps) 1.50
Battle for Leyte Gulf (Navy) 4.00
Battle for Tarawa (1st Marine Div.) 1.50
Bougainville and Northern Solomons 2.00
Campaigns of Pacific War (Bombing Survey) 2.25
Capture of Attu (7th Div.) paper .25; cloth 2.00
Defense of Wake (Marines) 1.25
Devils in Baggy Pants (504th Airborne) . 5.00
Down Ramp (1st, 2d, 3d, 4th, 5th, 6th Spec Eng Brig) 2.98
Dress Rehearsal (Dieppe commandos) ... 2.00
First Cavalry Division 3.00
Flak Bait (9th Air Force History) 5.00
Guam (77th Division) ..... .55
History 2d Engineer Special Brigade 6.00
The Island (Guadalcanal—1st Mar. Div.) 3.00
Island Victory (Kwajalein—7th Div.) paper .25; cloth 2.00
Lucky Forward (Allen) (3d Army) 5.00
Marines at Midway ..... .50
Merrill's Marauders ..... .55
The Negro in World War II 4.00
New York to Oberplan (Major Hardin) .. 2.50
Night Climb (10th Mountain Div.) 2.50
Okinawa: The Last Battle (1st and 2d Marine, 7th, 27th, 77th and 96th) ... 7.50
Omaha Beachhead (1st Army) 1.75
Papuan Campaign ..... .55
River to the West 3.00
St. Lo (XIX Corps) 1.25
Salerno (Fifth Army) ..... .60
Small Unit Actions (2d Rang Bn, 27th Div, 351st Inf., 4th Arm Div) 1.25
Striking Ninth (9th Marine Regt.) 5.00
Target: Germany (8th Air Force) 1.00
Thunderbolt Across Europe (83d Div.) .. 3.50
Timberwolf Tracks (104th Div.) 4.00
To Hell and Back (3d Div.) 3.00
Uncommon Valor (all Marine Divs.) ... 3.00
Utah Beach to Cherbourg (VII Corps) ... 2.00
Volturno (36th Div.) ..... .40
The Winter Line (II and VI Corps) .... .35
With the II Corps to Bizerte ..... .50
2d Engineer Special Brigade 6.00
12th Inf. Regt. 7.50
13th AF (Fiji to PI) 10.00
56th Fighter Group 10.00
120th Regiment 6.50
129th Regiment 5.00
233d Eng. Combat Bn. 6.00
305th Regiment—Second to None 5.00
363d Regiment 5.00
376th Regiment 3.50
398th Regiment 5.00
409th Regiment 5.00
508th Regiment 5.00
3d Infantry Division 6.00
6th Infantry Division 5.00
7th Infantry Division—The Hour Glass.. 6.00
11th Airborne Division—The Angels.... 6.00
24th Inf Div—Children of Yesterday.... 3.00
27th Infantry Division 10.00
29th Infantry Division—29 Let's Go!.... 5.00
30th Infantry Division 4.00
33d Infantry Division—The Golden Cross 7.50
41st Infantry Division—The Jungleers... 10.00
42d Infantry Division 5.00
76th Infantry Division 5.00
77th Inf Div—Ours To Hold It High.... 6.00
81st Infantry Division 6.00
83d Inf Div—Thunderbolt Across Europe 3.50
84th Inf Div—Battle of Germany 5.00
85th Infantry Division 5.00
88th Inf Div—Blue Devils in Italy 5.00
89th Infantry Division 5.00
91st Infantry Division 5.00
94th Infantry Division 5.00
96th Signal Communique 1.25
101st AB Div—Rendezvous With Destiny 7.50
101st Airborne Division—Epic of 2.50
104th Inf Div—Timberwolf Tracks 4.00
106th Inf Div—St. Vith: Lion in the Way 5.00
442d Combat Team—Americans 5.00
501st Pcht. Inf—Four Stars of Hell 3.75
504th Infantry—Devils in Baggy Pants... 5.00
First Special Service Force 5.00
1st Marine Division 6.50
2d Marine Division—Follow Me! 6.00
3d Marine Division 5.00
4th Marine Division 5.00
5th Marine Division—The Spearhead.... 6.50
6th Marine Division 5.00
9th Marines—Striking Ninth 5.00
5th Army—Salerno to the Alps 6.00
9th Army—Conquer 4.50
390th Bomb Group 14.00

YOUR *Sportsman's Book Club*

Membership-Acceptance GIFT

You are cordially invited to become a Charter Member of The Sportsman's Book Club and to accept, as a GIFT with your first selection, these two modern classics of wildlife and outdoor lore.

SALAR THE SALMON

THE PHASIAN BIRD

Salar the Salmon and *The Phasian Bird* rank among the few truly great wildlife books of all time. Salar, the Atlantic salmon, and Chee-Kai, the pheasant, live vividly for you from birth until they fulfill the life cycle.

Henry Williamson's sure knowledge of his subjects—knowledge that ranks him high among naturalists—combined with a poet's insight, have produced two books that are at once an education to the sportsman and a delight to read.

As a Charter Member of the Sportsman's Book Club, you will belong to an organization whose sole purpose is to bring you the *best* books on hunting, fishing, outdoor lore, shooting, and other allied sports—at a considerable saving to you in time and effort.

The Club offers you advantages unprecedented in the field of fine sportsman's books. Every two months you will receive The Sportsman's Book Club News, which will contain descriptions of the Club selections, reviews of these selections and other outstanding books for sportsmen, announcement of the latest bonus books, and a special feature article by a distinguished author.

With the *News* you will receive your selection slip, on which you may indicate your choices, tell us you want *no* selections until the next issue, or leave the books you'll receive to our discretion.

You pay nothing until you receive your books. Your invoice will be enclosed with them—and will amount to the cost of the books, plus a flat fee of 24 cents to cover postage and handling—whether we ship you one book, or fifty.

All of the books you choose will give you credit toward the *handsome bonus book* you receive with every third book you take.

The books the Club selects will be of proven value. They may not be new books—good books on hunting, fishing, and outdoor life are timeless—but many of them will be new and valuable additions to your library.

Naturally, the Club stands behind this guarantee. Any book with which you are dissatisfied may be returned for full credit.

In return, you have only one obligation—to select a minimum of four books a year from the many fine books the Club offers you.

And remember, this is *your* Club. We welcome inquiries, suggestions, and comments from you at any time.

Use this Handy Order Form →

Your First Selections

UPLAND GAME SHOOTING
By H. L. Betten

Upland Game Shooting is an informal, yet detailed and authoritative description of upland game hunting in North America.

Here is a mine of information of practically every known species of upland game found in this country—where it can be found, its characteristics and habits, the shooting season, and much more.

Lynn Bogue Hunt has illustrated the book with nine full-color plates and many black-and-white drawings.

Actual size 5¾ x 8½"; bound in durable maroon cloth; stamped in gold; 450 pages. Retail price $5.00.

To Members $3.00

BASS FISHING
By Jim Gasque

Here is the ideal book on fishing for fresh-water bass, both large-mouth and small-mouth. Jim Gasque describes the habits of the fish, where you'll find them, variations in their habits, what rods, reels, and lures to use, problems of the seasons, the differences between lake, stream, and river fishing—tells you, in fact, everything you'd ever be likely to ask about bass fishing.

Splendidly illustrated with full-color plates and 40 black-and-white photographs. Actual size 5¾ x 8½"; bound in durable maroon cloth; stamped in gold; 205 pages; index. Retail price $4.00.

To Members $2.65

MEMBERSHIP ACCEPTANCE

SPORTSMAN'S BOOK CLUB
1115 17th Street, N.W.
Washington 6, D. C.

Gentlemen: Please enroll me as a Charter Member of Sportsman's Book Club, and send me, as a gift, both **Salar the Salmon** and **The Phasian Bird.** I understand that, as a member, I will be offered new selections each two months, which I may accept or reject **in advance.** I pay only the cost of the books I actually accept, plus a small charge for postage and handling. I agree to accept at least four books during the first year I am a member and I may cancel my membership at any time after purchasing four such books from the Club.

My first selection _____

Name _____

Address _____ **City** _____ **Zone** _____ **State** _____

SBA

POSTMASTER: If this magazine is addressed to a member of the United States Military or Naval Service, whose address has been changed by official orders, it may be forwarded without additional postage. See Par. 10, Sec. 769, P. L. & R. Entered as second class matter at the Post Office at Washington, D. C. Additional Entry at Richmond, Va.

RETURN POSTAGE GUARANTEED BY THE COMBAT FORCES JOURNAL
1115 17th St., N.W., Washington 6, D. C.

The Effects of ATOMIC WEAPONS

Prepared by

THE ATOMIC ENERGY COMMISSION

and

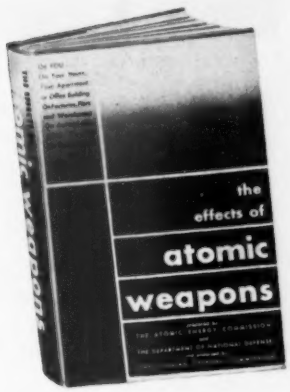
THE DEPARTMENT OF NATIONAL DEFENSE

456 pages
175 photographs
and drawings
Complete Index

This official information, vital to every American, is no longer the private property of atomic scientists. *The Effects of Atomic Weapons* tells you what happens when an atomic bomb explodes—what type of construction is best able to resist the blast—what happened when previous bombs were detonated.

You learn what the bomb will do if exploded in the air, under water or under ground—the danger from fire, from initial and lingering radiation. Included is a valuable discussion of the essential disaster facilities for your community or military installation.

Whether you are frightened at the implications of the bomb, or want to know more about it properly to perform your duties as a citizen—this is your book.



$3.00

A perfect companion to THE EFFECTS OF ATOMIC WEAPONS

How to Survive an Atomic Bomb

By Richard Gerstell

Here, written in simple language anyone can understand, is a valuable book that shows *how you may save your own life* in case of an atomic attack.

It gives full facts on what you should and *should not* do before, during and after an atomic explosion. In step-by-step fashion it explains how to be prepared beforehand—how to protect yourself and others during a bombing—the steps necessary to save yourself if you have been exposed to the bomb.

Included are special sections for people who live in apartments or private houses, in cities and towns or in the country, and a discussion of civil defense. An appendix, "How the Bomb Works," explains in nontechnical language the mechanics of the atomic bomb.

Only $1.95

Order from

U. S. ARMY COMBAT FORCES Book Service
1115 Seventeenth Street, N.W. Washington 6, D. C.

Printed in U. S. A.